

Vol. XII.

NEW SERIES.

MAY, 1903.

Biological
& Medical
Serials

THE OPHTHALMIC RECORD

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PUBLISHED ON THE FIFTEENTH OF THE MONTH.

SUBSCRIPTION RATES: IN THE UNITED STATES, CANADA, AND MEXICO, \$4.00
PER ANNUM, IN ADVANCE. OTHER COUNTRIES OF THE
POSTAL UNION, 18 SHILLINGS.
SINGLE COPIES 50 CENTS.

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THE HIGH BUILDING, CHICAGO, U. S. A.

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The June number of THE OPHTHALMIC RECORD will contain a Report of the Ophthalmic Section of the American Medical Association; an original article by Edward Jackson, M. D., The Ophthalmoscopic Examination of the Macula; one by Wm. P. Malone, M. D., Spring Catarrh; one by A. G. Hobbs, M. D., The Action on Mucous Membranes of Silver Salts with Especial Reference to Some of Their New Organic Forms. There will also appear Editorials, Society Reports, Abstracts and Personals and items of interest to the profession.

THE RECORD particularly desires short practical papers on any subject connected with Ophthalmology. These will be published at as early a date as possible. It is understood that, unless otherwise arranged, original articles, when accepted, are contributed to the RECORD exclusively. Illustrative cuts will be made at the expense of the journal, and proofs for correction will be sent to authors when desired. Reprints with covers will be furnished at cost. The RECORD will be issued monthly, and each number will contain about 54 pages of reading matter.

Address all communications relating to Editorial Department to

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103 E. Adams Street, CHICAGO.

Subscriptions and Advertisements should be sent to the Publisher, the High Building, Chicago, Ill., U. S. A.

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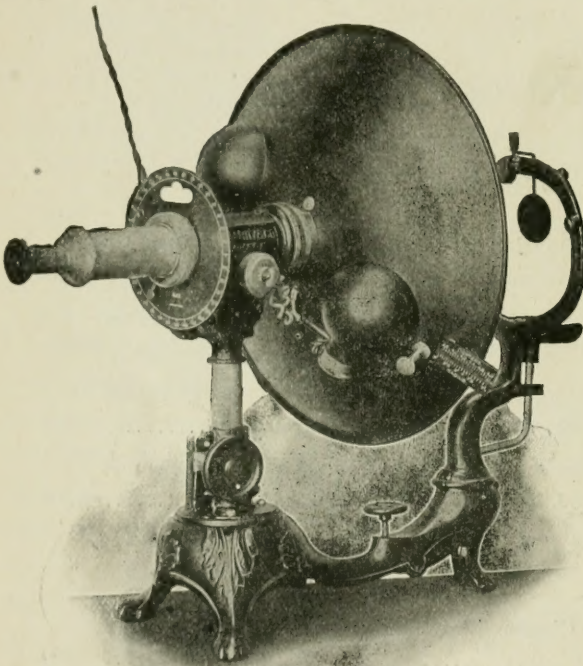
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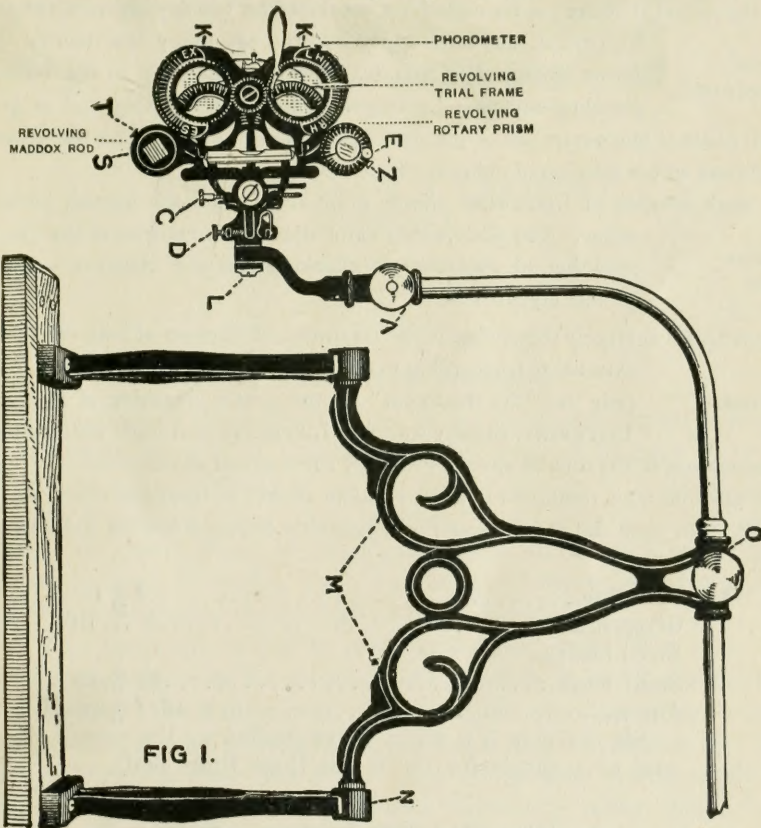


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THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY.

VOLUME XII. No. 5.

CHICAGO, MAY, 1903.

NEW SERIES.

ORIGINAL ARTICLES.

CONFESSIONS OF A TRAVELER.

(Continued)

BY ALBERT B. HALE,
CHICAGO.

(Illustrated.)

THE HEIDELBERG CONGRESS.

Simplicity is the greatest charm of the Ophthalmological Society which meets annually at Heidelberg. The savor of Richard Hovey's Stein song was continually on my lips, and the refrain "'tis always fair weather when good fellows meet together," could have no more fitting scene. Of course, there is something besides, for in addition to the science of good fellowship there was the good fellowship of science, which is undoubtedly the strongest tie in the world!

This simplicity is due to more causes than one. The lack of politics surely relieves the members of any effort beyond participation in the work of the Society; and the self-limited character of this work, pure ophthalmology, precludes any suspicion that one factor may be given prominence over any other. But the greatest reason of all is the character fostered by the German University career, which has but one aim, the advancement of truth in whatever shape it may be presented.

The informality of the Congress I did not detect, however, until after I had become a member. It was therefore with some trepidation that I made application to the Secretary, Prof. Wagenmann. I feared that I had not brought credentials, I had not joined the county medical society, I could not prove that I had preserved an ethical standard

in my specialty for a term of years, nor did I have anyone to vouch for me. But all this was unnecessary, a simple statement that I was interested in ophthalmology served as a satisfactory passport, and on payment of the small fee of 6 marks I was enrolled among the learned of the world! How quickly it was all done—no committee on membership and no balloting; and how much it all meant; yet I am sure that this very informality serves to preserve intact the dignity and purity of the transactions. Everyone is welcome who can enjoy and benefit by the work done, and no one would ever think of intruding if he were not worthy nor if he thought selfishly to use the Society for his personal gain.

The evening before the official opening there is a delightful gathering of members in the Stadtgarten, a small, semi-private park within the city, where there is, during the summer, a concert every evening. The management courteously reserved quite a large space for our use, and here were gathered together for the first time since the previous year the old members, the new, and the wives or other ladies who might be interested; and everybody shook hands cordially while asking for the health of those who could not come. Soon tables were drawn together, beer was ordered, toasts drunk, and a gentle, refined sort of Commers was begun. Really, this first reunion is the social feature of the society, and much of the preliminary work is cleared away without the need of committees or announcements.

The next morning at nine the business session begins, the meeting for the reading of papers taking place in the Aula of the University. Officially, the conduct of the Congress is of three dimensions, one might say. The morning is given to the literary function, when only formally prepared papers are read and discussed; the early afternoon is spent in the University Eye Klinik and its laboratory, when cases are presented, demonstrations of specimens, instruments or apparatus, or microscopical exhibits made, during which members may move about without ceremony, but exhibitors are allowed five minutes and members two minutes in which to talk. The late afternoon and evening is purely social; for those who are strangers to Heidelberg there are numerous excursions planned, and the ladies take delight in arranging and conducting these trips; in fact, ladies are a large part of the Congress, and the poor, solitary traveler, who, like myself, may be careless enough to leave his wife behind, will regret it and feel that Heidelberg has other sources of pleasure than science. The first evening there was a delightful social gathering and dinner in the Hotel Bellevue terrace; here, again, every one met every one else

and his wife, and at the end there were a few impromptu speeches, a general interchange of national and international ideas, experiences and compliment—and a dash through the town to the *Stadtgarten*, where the social side of the society began all over again.

The next afternoon there was a delightful carriage drive up the Neckar valley, with a simple supper at the end of it; but the *Stadtgarten* was still the attraction, and here again in the evening one met members and the ladies, this time to say good-bye.

I dwell upon the social side of the gathering, because I was surprised to find that so much importance was given to entertaining not only strangers and foreigners, but also such ladies as might be visiting Heidelberg, and I strongly advise everyone who plans to attend the Ophthalmological Society there to prepare for these functions with as much anticipation as for the scientific program itself.

Nevertheless it is the work of the Congress which attracts us, and from nine each morning for three days till about one, the serious side is all absorbing. There is really very little so-called business to receive attention; Professor Leber with a few genial words of welcome declared the meeting in session and then, according to custom, invited to the chair for the morning some distinguished member—usually a foreigner—who controls for the time being the proceedings on the floor. The program is divided into but two parts—papers for the morning, of which there were 38 announced, and demonstration for the afternoon, of which there were 31, so that when the time expires for one day the next number to the one finished is the first to be read the following morning, or to be demonstrated the following afternoon. Each paper is supposed to be finished within twenty minutes and each discussion within eight, but I noticed that the rule was often violated, and it was infrequent that the presiding officer “held the watch” on the speaker. Some of the members committed their papers to memory, some spoke from notes merely and some rather extemporaneously, although it is a well observed rule that every paper must be ready for the printer before the close of the Congress. The discussions were always alive, yet never acrimonious nor personal, but occasionally some statement would meet with a flat denial or disapproval and the essayist would attempt to maintain his position, but the spirit was always friendly.

It is not my intention to examine the program *seriatim* or critically. My own feeling at the present meeting is to give prefer-

ence to the papers of Römer (Würzburg) on the "Serum-therapy of *Ulcus Serpens*" and of Kruckmann (Leipzig) on "*Iridoeylitis Syphilitica*"; but others might prefer subjects of different character. As one might expect from German University teachers, there was a predominance of pathology and a goodly proportion of theory, and yet it pleased my humble Americanism very much to discover that after all the German is very human. He is not always in the clouds! More than once the man who "had a case" was on his feet in an instant, to report it, to show how he had made a diagnosis of this and that, had tried one therapeutic measure or another, to conclude that he had made a wonderful success or had been all wrong. I shall never again be afraid of reporting "a case of" after what I heard in Heidelberg, for the world over experience in practice arouses as much interest as experience in the laboratory.

For the foreigner I might say that the afternoon demonstrations at the Eye Klinik are the more instructive and certainly the more entertaining. The papers can all be read at leisure in the printed transactions, but the cases, the new instruments and especially the microscopic and pathologic slides or specimens must be seen on the spot to be fully appreciated. No amount of description or plate making will convey the same idea as will direct observation of the actual case or preparation, and I noticed that the attendance here was fully as large as in the morning, while the enthusiasm for discussion and criticism was even more animated and vigorous. The idea seems to me excellent; not only to separate distinctly papers from demonstrations, but to devote a definite part of the program to such demonstrations, so that it may be taken as a formal part of the gathering, and I feel sure that our section of the A. M. A. would gain by so doing.

There is one question that seems still unsettled and that receives renewed discussion at every annual meeting at Heidelberg. Shall the society maintain its meetings permanently there on the spot where its founder v. Graefe originally planned it, or shall it adopt the method pursued by other similar societies and become migratory, selecting each year a different locality so that members of North Germany or elsewhere may have their turn at being at home? Romance, old association, even convenience prompt the former; impartiality, modern custom and again convenience prompt the latter. It is always discussed, not yet decided, for up to last year the "Ophthalmological Society" has never been an incorporated organization; but for the first time in its history this society has

ILLUSTRATION

MENTIONED IN ARTICLE BY ALBERT B. HALE.



ENTRANCE TO THE UNIVERSITY EYEKLINIK (LEBER'S)
HEIDELBERG.

now come to a point where it must settle this question. It needs, demands a home. Shall that home be permanent only for its library, its specimens, its records, or shall it provide also a home for its meetings, become incorporated and live forever as the Heidelberg Congress? An endowment has been offered the society, which it may soon accept, a committee is now at work to devise a scheme of action, and I have myself little doubt but that this coming meeting will be able to point to a future material home permanent on the banks of the Neckar.

COMMENTS, CONFESSIONS, CRITICISMS.

The question is often asked and probably as often answered, why do we Americans go abroad to study? A reply must be given to two classes, the student, and the practitioner. The student goes to learn either what he has already studied in a general way or what will be to him more or less a specialty in the future. The practitioner goes either to refresh himself in knowledge which has become too obscure during his hurried life of activity, or merely to observe the habits of other men and by comparison to see how they attack the problems he himself has met; he often comes home convinced that in Germany at any rate there is greater opportunity for scientific work and more extended ability to apply in practice a theoretical conclusion, but that his native countrymen may well be proud of what they have accomplished with present conditions.

No one, however, can deny the supremacy of German University Hospitals as teaching centers, and I think there are five good reasons for this, apart from or in addition to, the intellectual cast of the German mind. *First*, and this must always be remembered in contrasting German with American schools, the professor or director of any public hospital is a salaried man; he is selected on account of his ability and is paid to devote so much time to his work, as is the head of a department in any commercial business here; when this work is over, and not before, is his time his own. He is the head, and so strongly does he identify himself with the hospital that instinctively one speaks of it as his. He belongs to the State, however, and is either promoted, retired or discharged, as his merit warrants.

Second, is the system of assistantships or what we would call the staff, which is fostered under him. The professor or director is supreme, but following close in his track are men of perhaps scarcely less fame, others who are developing, and others still who are be-

ginning, but all are paid, each is directly responsible to the one above him, and each must work for that hospital if he wishes to advance.

Third, the age of the hospital; not necessarily of the building itself, but of the refuge for the sick as a social institution. Many buildings are indeed hundreds of years old, as the Hebammeschule in Strassburg, but the origin of nearly all as institutions goes back to a more or less remote past. The people have always known of the hospital; it has always been in sight, always accessible even when looked at with fear or even horror—an attitude which, thanks to modern science, the present generation has lost. The people whether from town or country, have always known where to go when ill or injured.

Fourth, the military discipline under which Germany is trained. An individual when sick, if he is told to go to the hospital, will go there; if once within the hospital he is told to prepare for an operation, he submits and asks no questions—orders must be obeyed. He is not the free born American who runs from one dispensary to another, perhaps finally to solace himself with the newspaper nostrum or the salve of the quack who promises to cure without the knife. (It must be confessed, however, that of late years Germany is by no means free from quacks who reap a rich harvest both in surgery and medicine.)

Fifth, the extensive but recent development of mutual aid societies in all departments of social and commercial life. I fancy it will surprise many of my readers to learn that the average German hospital does not encourage the free bed; even the University hospital is on a paying basis, charging so much for a bed in the ward, for the occupant of this bed is frequently a member of a Society (Genossenschaft) to which he pays dues and which so subscribes to the hospital that for a moderate daily sum its members receive attention. In fact many hospitals of the second and third class depend on these societies for support, and many a man doing good scientific work builds up a practice in his hospital by becoming physician or surgeon to a society. I don't deny the fierceness of competition in the large German cities, the pitiful fee the doctor is forced to accept, but I do affirm that the extravagantly free hospital "supported by voluntary contributions," the unrestrained charity of other countries is not accepted by German method, and that many a patient whom we see ordered about the ward, has paid for his accommodation with the understanding that the reduced rate entitles the director to use him as material.

It is for these reasons that the teaching hospital in Germany has today such a constant supply of patients and makes such thorough

use of its facilities. All this applies equally well to the eye hospital except that it is of more recent growth, but for this reason it escapes some of the traditions and has more modern housing than many of the medical hospitals.

English hospitals are of a more familiar pattern. They have a staff, men of equal authority as seniors, of less authority as juniors, and resident internes of limited service, aided by clinical clerks as externes. These are not paid employes but hold office as an emolument, depending upon practice or private fortune for a living.

To see hospital life in full bloom, to study science in its purest application, is the motive that drives the American to Germany. *Only* by knowing German, however, can he find it. Otherwise he must go to Vienna, but there he will not obtain such symmetry of instruction; he will specialize and putting his specialties together he will obtain a mosaic, but not a polished whole. There is no doubt whatever but that in Vienna the student of limited time will reap the greatest returns, yet he will not find that philosophic thoroughness which is the charm of a smaller German university. And it is this last with the completeness of accessory detail, by which the student learns most. I myself know of no eye hospital in the United States so perfect in its equipment as one or two of those I have mentioned. They may have the instruments (but I doubt it) or the material, or the famous men on the staff, but they do not give the attention to detail which is a routine in Germany. They do not have the responsible staff whose labors belong permanently to the institution. This is what the student gets when he goes to Germany, and his ideals will be made higher and clearer by it. This he will not get in England (London)—he will see there some fine hospitals, many brilliant operators, but he will not have that methodical training in technique which places a man firmly on his own feet. I heard at Moorfields two Americans comparing notes with each other and with an Australian, to their eminent satisfaction with their studies in London, but—neglecting the inconvenience of location and loss of time—they will not carry back with them such knowledge of detail as life in Germany will give.

All this is a comment for the student of ophthalmology going abroad. It applies with equal force for the maturer practitioner in other specialties outside of our own, but I rejoice to say that I was this summer greatly impressed and flattered by the high standing of American ophthalmology, illustrated by the frequent question "how would you in America do this?" and pleased to find that we are by no means

backward in the study of the more intricate problems of etiology, pathology and treatment. Ophthalmology is a well trodden field, and for that reason perhaps does not offer to the speculative German mind that wide area for investigation which acts as such a great stimulus and in which we must still take our cue from their universities; but operative technique, ward treatment, the diagnosis of individual cases, are matters of detail in which we need acknowledge no masters. Even in the affairs of undergraduate teaching we must as yet pursue our own methods as better fitted for American undergraduate students who do not show that uniformity of preliminary education which will make a discussion of a refined problem in optics a fascination to them. I have seen German students crowd the benches listening eagerly to a demonstration of the influence on light of refractive media, but turn away with comparative indifference from a cataract operation. But the American medical student loves the knife and blood and places the clinical above the didactic.

When therefore the more experienced practitioner travels through England or Germany, he has his own ideas, habits, if I may use the term, and I am proud to say he finds them often very good and worth retaining. Let me go further and say that he will find nothing new beyond what is always novel in the personal sense when he sees other men working in the same field. He may pick up a new instrument or operative trick, but he will also conclude that the problems bothering himself are equally bothersome to his European colleagues. Take the "simple operation" in cataract extraction, for example; in most of the hospitals this is at present the operation of choice, but iridectomy is by no means discarded. Some men are conservative, others radical, but it is no more definitely settled there than here, which is the scientifically proper course. Take again extraction of the lens for high myopia. One man removes the clear lens at once and thinks it the safest and shortest method; another performs only the two operations, a thorough discission followed a week or so later by a careful release of lens matter—each claims good results. Or a third case, the treatment of dacryocystitis. One man will remove it in all cases, another will not hear of it. We here show no greater disagreement.

It is therefore the atmosphere of profound knowledge, of scholarship, that adds most to the enjoyment of travel, and also, perhaps, the luxury of study from a scientific rather than a practical viewpoint. To see used the Thorner ophthalmoscope, the Zeiss corneal microscope in nearly every case, to have a full bacteriologic and pathologic report of every secretion and tissue, to be able to correlate many cases, to find

every accessory means of illustration brought into play, to have an exhaustive literature at one's elbow, all this makes for the profit of travel-study. I trust I am disappointing no one by failing to describe some wonderful operation, some technique of skill surpassing our own, some new drug that works wonders; or to bring back some instrument that has as yet been used by no one this side the water—but we do not need to go to Germany or England in ophthalmology. New devices there are, new instruments and new drugs, but some of them are of American pattern, others but mere experiments awaiting the judgment of time. I could tell of many beautiful things I saw, but I do not believe that putting it in print would help others to solve their difficulties. America cannot yet write a Graefe-Saemisch Handbuch, but she can now-a-days do things to her everlasting credit.

In conclusion I am going to allow myself two criticisms, for though professional courtesy is hospitality itself in the reception of a foreigner, one cannot allow this to obliterate one's judgment of men or science. The traveler notices at once in the large German cities the outspoken, often unkind remarks made by members of one clique against those of another. It destroys our reverence for the whole body to hear one whose name means much to us, called a pretender, a fossil. Scandal and jealousy we have at home, but the golden rule is not so well observed there but that we often sigh for the good humor of our own little jealousies left behind. In England it is otherwise; professional relationships and reputations are better guarded, and one admires the honest, manly rivalry without meanness with which they mention each other's names.

Antisepsis is England's gift to us; asepsis comes from Germany, and yet in both England and Germany, if one looks far enough, one may see shocking violations of both principles or methods. We Americans seem to have grasped with eagerness the time shortening, practical sense of this surgical procedure, and though we sometimes misuse we never violate the application of it, while in well known hospitals abroad I have seen an entire absence of an antiseptic or aseptic regime. The Englishman is apt to mistake cleanliness for asepsis, or drugging for antisepsis; the German often has a theory of asepsis to work out to the dumbfounding of practical surgery, or theorizes about germ destruction by drug to the ignoring of well established experience. Be that as it may, one regrets to find no uniformity, and is continually surprised that there is no general standard of method below which nothing is allowed. Even this, however, helped to strengthen my growing conviction that respect, admiration, love for European science must ever

actuate us, but that after all I was glad and happy to be able to call myself an American.

[NOTE.—Any criticism of the ideas or opinions in this article I will gladly accept, but criticism of the statements of fact I can only refer to the sources from which I received them, as I was careful to ask for these statements of fact from those in authority who ought to know.—A. B. H.]

PARALYSIS OF EXTERNAL RECTI MUSCLES APPEARING AFTER A BLOW ON THE SKULL.

BY EDWARD LAUDER, M. D., C. M.,
CLEVELAND.

Lecturer on Ophthalmology, Cleveland College of Physicians and Surgeons; Consulting Oculist to the Cleveland City Hospital; Ophthalmic Surgeon to the Out-Patient Department of the Cleveland General Hospital; Oculist to Lake Shore & Michigan Southern R'y.

Case I. E. F., aged 25, American, presented himself at the ophthalmic out-patient department of the Cleveland General Hospital 27th February, 1899. He complained of seeing double and gave a history as follows: On 11th February, or sixteen days before date of coming to hospital, he had attempted to stop a fight between two men and received from one of them a blow on the head in the region of the left occipito-parietal suture. He was unconscious for a few minutes but was able later to walk to his home. There was no swelling caused by the blow, but the pain was so severe as to confine him to his bed for several days. As the pain began to diminish it seemed to pass along the left side of the head; it ceased the eighth day after the injury and the patient then noticed that he saw double.

Examination showed that he had a paralysis of the left external rectus muscle and that the left eye turned in to the extent of 45°. The patient was able, with an effort, to turn the left eye into almost the primary position, the right eye being covered, but the movement was very slow. Examination of the fundi with the ophthalmoscope showed the right fundus to be perfectly normal, while in the left the outline of the optic disc was somewhat hazy. This patient was under my observation for several months. The case terminated in complete recovery.

Case II. A. S., aged 42, German, was brought into the Cleveland General Hospital on 24th February, 1901. He was what is com-

monly known as a "weary Willie" and had been taking a free ride on the bumpers of a freight car in a train which was wrecked. He was severely injured and when admitted showed all the symptoms of fracture of the base of the skull resulting from a blow on the vertex. Five days after he was admitted I saw him for the first time. Both eyes were converged, as had been noticed by the house surgeon when admitted, and he complained of diplopia and vertigo. He was unable to bring either eye into the primary position, the other being covered, although he yet had some power in the external recti. Pupils were small and reacted to light stimulus. Ophthalmoscopic examination showed normal fundi. The patient remained in the hospital two months. At the end of that time the convergence and diplopia were still present. He refused operative interference. To prevent diplopia and vertigo he wore a patch over one eye and in that condition left the hospital.

Case III. J. M., aged 45, Austrian. Admitted to Cleveland City Hospital 25th January, 1902. It was very difficult to get any history of this case because of his inability to articulate distinctly. Several weeks before admittance to the hospital he received a blow on the top of the head from an ore or coal bucket. He was unconscious for several hours, and confined to bed for over two weeks. When I saw him at the hospital his right eye was strongly converged, and the external rectus was apparently without any power. The convergence had been present since the day of injury. The pupil reacted to light. He complained of diplopia and wore a shade over the eye. A satisfactory ophthalmoscopic examination could not be made. In this case the seventh and eighth nerves of the right side were also involved, as was evidenced by inability to completely close the lids of the right eye, pucker the lips, or articulate distinctly, and by deafness in the right ear, as shown by the tuning fork. He remained in the hospital for two months. Operative interference was denied. Neither the ocular, lingual nor auditory condition showed marked improvement up to the time of his discharge.

Paralyses, such as reported, following a blow on the skull, are not so rare as might be supposed. The external rectus muscle, supplied by the sixth nerve, is the one most commonly affected—sometimes unilateral, as in Cases I. and III., but not infrequently bilateral, as in Case II. Other cranial nerves are liable to involvement, those most frequently involved being the optic, fifth, seventh and eighth nerves. In Case I. the optic nerve was involved, though only moderately. In Case III. the seventh and eighth nerves were involved.

A study of the anatomy of the cerebral surface of the base of the skull and the relation of the cranial nerves, shows their proximity to the apex of the petrous portion of the temporal bone, through which fractures of the base usually extend, and their consequent liability to involvement. Tracing the fifth nerve we find, "The two roots of the nerve pass forward through an oval opening in the dura mater, on the superior border of the petrous portion of the temporal bone, above the internal auditory meatus: they then run between the bone and the dura mater to the apex of the petrous portion of the temporal bone." The sixth nerve "pierces the dura mater on the basilar surface of the sphenoid bone, runs through a notch immediately below the posterior clinoid process, and enters the cavernous sinus." The seventh nerve "passes forwards and outwards upon the middle peduncle of the cerebellum, and enters the internal auditory meatus." The last two nerves lie farther from the tip of the petrous portion than do the others, and yet they come within one cm. of the tip.

The third and fourth nerves have been reported as involved, but much less frequently than the optic, seventh or eighth, although their relation shows proximity to the tip. This infrequency, as compared to the other nerves, is accounted for by the fact that experiments have demonstrated that a fracture at the tip of the petrous portion frequently has fissures running into the optic canal, the body of the sphenoid bone, and the tympanic cavity, thus the more frequently involving the optic, the seventh and eighth nerves.

Paralysis of the sixth nerve due to fracture of the base may exist without coma, or the usual symptoms of basal fracture being present. Such a paralysis is either primary, as in Cases II. and III., or secondary, as in Case I., that is, it occurs either immediately after the injury or some days or weeks later. Primary paralysis is due to direct injury of the nerve by the fractured bone; while secondary paralysis is due to compression of the nerve by hemorrhage, inflammatory exudate, or the formation of callus. In primary paralysis the prognosis is unfavorable, only about 24 per cent recovering. In secondary paralysis, however, when absorption of the hemorrhage, exudate or callus occurs, the muscle usually regains its usefulness. The period of disability varies with the character of the substance causing pressure—an exudate or blood clot disappearing much more readily than a callus, the disappearance of the latter, as a rule, occupying many months.

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A SIMPLE TEST FOR STEREOSCOPIC VISION.

BY FREDERICK HERMAN VERHOEFF, A. M., M. D.

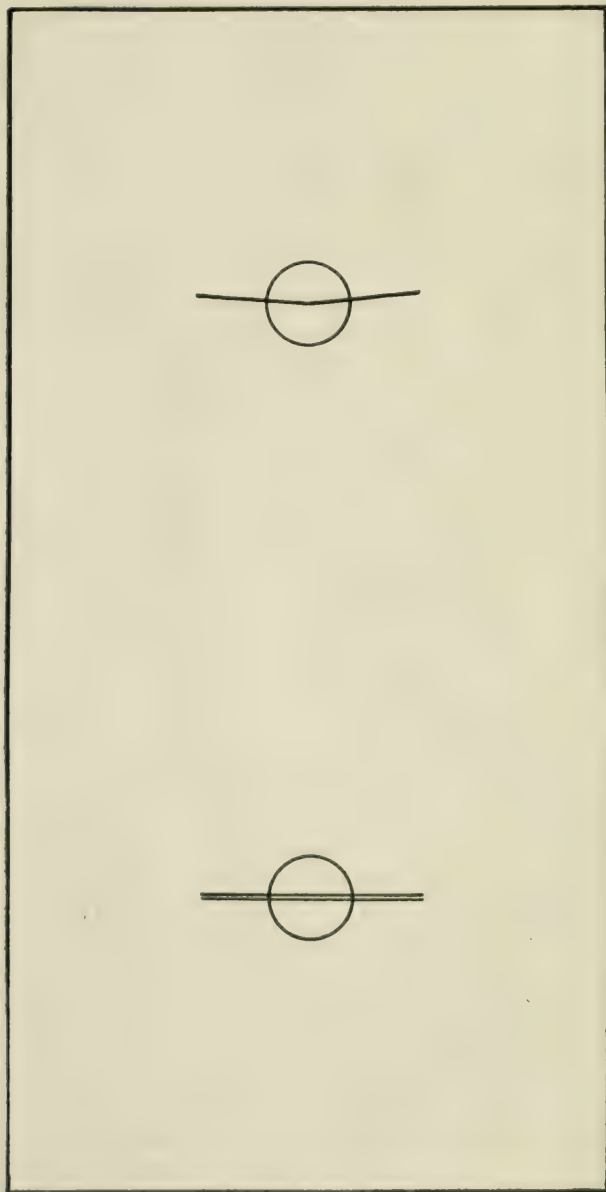
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(Illustrated.)

While the tests usually employed for demonstrating the existence of stereoscopic vision are probably satisfactory in the majority of cases, nevertheless they leave room for doubt in just those few cases in which it is most important that our evidence should be indisputable. Probably the most satisfactory of them for practical purposes is the prism test, by means of which binocular fixation is determined. However, when negative, this test can not be relied upon, since the tendency to overcome prisms is sometimes very slight even when binocular vision is present. And when positive, this test does not absolutely prove the existence of stereoscopic vision since it can not be considered certain that binocular fixation may not sometimes occur in the absence of stereoscopic vision. The bar-reading test, as well as the test in the stereoscope with haploscopic figures, are also not always reliable. When positive they indicate simultaneous vision with the two eyes, but not necessarily true binocular vision. This is also the case with the familiar "bird in the cage" experiment and with the test with colored letters. Hering's test with falling balls requires so many precautions in its use that it can not be regarded as entirely satisfactory. It seems possible, too, that a patient who is unable to fuse slightly disparate images stereoscopically, might nevertheless learn by experience roughly to estimate depth by widely disparate images and thus be able to pass Hering's test. Such a patient would judge distance according to the empiristic theory of Helmholtz.

The ordinary stereoscopic diagrams which are constructed so as to produce a striking plastic figure, such as a cone, would serve perfectly as tests were it not for the fact that even in monocular vision they may give rise to an idea of plasticity. This is, of course, not so marked as in binocular vision, but it is sufficient to render such tests practically worthless.

The following test is not open to any of these objections and possesses the great advantage of simplicity. The test is made by combining in a stereoscope the two figures shown in the accompanying illustration. If stereoscopic vision is present the combined figure will consist of one circle through which two parallel lines run, each of which is bent at the center of the circle so as to form an angle



A SIMPLE TEST FOR STEREOSCOPIC VISION.

whose vertex points towards and to the left of the patient. If stereoscopic vision is absent, the seeing eye is detected when the patient states that he sees one or the other of the figures.

This test is superior to the tests with haploscopic figures because it is dependent upon true psychical fusion, while the latter are dependent upon the mere matching together of divided figures. It is superior to the tests with stereoscopic diagrams because neither of the single figures can be mistaken for the combined figure. The fusion of the parallel lines with the single bent line is readily explained by the theory of stereoscopic vision recently advanced by the writer.* According to this theory there is produced in a special center for binocular vision, two images, one of which is intermediate between the bent line and one of the parallel lines, and the other intermediate between the bent line and the other parallel line.

Before making the test, the left eye should be screened and the right hand figure viewed through the stereoscope, so as to make sure that an appearance somewhat similar to that of the combined figure is not produced by monocular diplopia. If there is any possibility of the latter leading to error, a modification of the test may be used. For this purpose the bent single line is replaced by a light gray one and a single bright red line is substituted for the two parallel lines. It is best for the red and the gray line to have the same width. On uniting the two figures in a stereoscope the combined figure consists of a circle and a red line which is *bent in the middle*.

The simple Brewster stereoscope will be found suitable for either test if certain precautions are taken. In order to avoid the discoloration of the lines due to chromatic aberration, the test should not be made in too strong a light. Vertical displacement of the figures must be avoided and care should be taken that the card upon which they are drawn is approximately perpendicular to the visual plane. If the distance between the figures is not correct, they may be cut apart and adjusted for the particular stereoscope in which they are to be used. Errors of refraction should, of course, be corrected. This is especially important in cases of anisometropia.

VIENNA, MARCH 26TH, 1903.

*Annals of Ophthalmology, April, 1902.

CONDITIONS AND DISEASES OF THE EYE WHICH MAKE AN ENUCLEATION NECESSARY.*

BY A. J. ERWIN, M. D.,
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Enucleation of the eye, although a simple operation, requires a thorough knowledge of the various conditions and diseases of the eye, which make enucleation necessary. In order to know when and how to operate, to know whether in a given case one should operate or not, and whether the operation when necessary should be a simple enucleation, a simple evisceration, or a Lang, or a Mules, requires that thoroughness of acquaintance with the whole subject, which comes only of large experience, and wide observation. There are many different diseases which may require the removal of an eye, irido choroiditis, pan ophthalmitis, macrophthalmus, intraocular tumors, some orbital tumors, traumatic irido cyclitis, extensive traumas, phthisis bulbi, and some cases of glaucoma. And yet in each of these cases the warrant for enucleation depends, not on the disease *per se*, but upon the conditions present.

Time will not allow me to point out the particular cases that require certain operations; you will have to be satisfied with a few rules for your general guidance, which are nearly invariable.

First. A blind eye, which menaces a sound eye, should be removed without delay.

Second. A nearly blind eye which has set up sympathetic disease of the other eye should not be removed.

Herein lies a fine distinction, which every operator must keep in mind.

Third. Remove every lacerated eye with a ragged wound in the ciliary region, before it has time to establish sympathetic disease of the sound eye.

Fourth. Remove every eye which contains a growing tumor, before it involves the orbital tissues.

Fifth. Eviscerate early in pan ophthalmitis.

We will briefly review these rules. The removal of an eye greatly disfigures the face, and is attended with some danger to life withall. Hence, should not lightly be undertaken, one must be quite certain of the necessity for the operation, it is not every blind eye you observe, but every blind eye that threatens the sound eye, or the health of the patient, which should be removed.

The second rule, viz.: A diseased eye with some sight, which has already set up sympathetic disease of the other eye, should not be

*Read before the North Central Ohio District Medical Society.

removed, because its removal will not save the other eye from almost certain blindness, and we may be able to save what sight it has. The only exception to this rule is—in case of malignant disease—where it becomes necessary to operate to save life.

The third rule especially requires mature judgment, for it is not every ciliary laceration which warrants enucleation. A clean rent that has healed promptly without contraction, is fairly safe so long as it remains free from irritation, and if later it should become irritable, the eye can be promptly removed. But a ragged laceration calls for the enucleation before it has had time to cause disease of the other eye.

The fourth and fifth rules are practically invariable. And almost everything else that may require enucleation is a law unto itself.

When the removal of an eye becomes necessary, the question arises, What shall the operation be? Shall we make a simple enucleation, or an enucleation with the ball in the Capsule of Tenon, Lang's, or a simple eviscération, or an eviscération with the ball in the scleral sac, Mules operation. Here again a careful study of the conditions present is necessary in each case. For instance, with impending sympathetic disease of the other eye, simple enucleation, where applicable, would be the judicious operation, as it is attended by the least reaction, and makes the earliest recovery. Again in panophthalmitis, the simple eviscération would be best, being least dangerous to the life of the patient, and easiest of performance. Enucleation and not eviscération should be made in all cases of interocular tumors, as they usually involve the sclera. And eviscération should always have the preference where there are adhesions of the sclera and capsule, unless there be countervailing conditions. I repeat where there seems to be immediate danger of sympathetic ophthalmia, the simple enucleation or eviscération should be made, but the demand for the best cosmetic effect now requires in all other cases, the Lang or Mules operation where possible.

During last spring, I saw these operations performed many times in the Royal London Ophthalmic Clinics, without one failure. Dr. Collins of the staff, informed me that he had made the Mules operation about a hundred times with very satisfactory results, and without one case of sympathetic ophthalmia following from the operation. Dr. Lang of the staff, gave me a similar report of his operation and claims that it is a better operation than the Mules, that there is less reaction, less danger of expulsion of the ball, and that it has all the advantages of the Mules operation.

I, myself, believe that the operations are equally satisfactory and that there are special indications for the one or the other; where there are adhesions, it should always be a Mules; where there is an irritable sclera but no adhesion, we should make a Lang.

The technique of Mules' operation is in brief, viz.: Take a firm hold with the fixation forceps, near the inner corneal margin, enter a Graefe knife behind your forceps, and follow the corneal margin to the other side, then make the other half of the circuit of the cornea with the curved scissors from the same starting point; you take hold of the edge of the sclera and introduce your spud between the choroid and sclera and lift out the whole choroid and vitreous together. Having completely emptied the scleral sac with the least possible friction, if entirely aseptic, a glass or gold ball about two-thirds the diameter of the eye is inserted. If at all septic, the inside of the sac is first rubbed with a fifty per cent carbolic acid solution on cotton wool. The sclera is then brought together with the purse string suture cut short, then the conjunctiva is closed with the purse string suture. A light compress and bandage complete the toilet. In forty-eight hours the conjunctival suture is removed, the scleral suture remaining permanently.

Mr. Collins believes that many cases of failures of the Mules' operation are due to allowing the superficial suture to remain too long, and insists that it should be removed at farthest in forty-eight hours. He and Mr. Lang both use the silk for suture.

Lang's operation is simply the ordinary enucleation with the glass or gold ball placed in the Capsule of Tenon, care being taken to cut the capsule as close to the corneal margin, as smooth as possible. The ball is immediately put in and the capsule closed by the purse string suture, cut short. Then the conjunctiva is likewise closed and the toilet completed with light compress and bandage. Forty-eight hours later, the eye is opened and the conjunctival suture taken out.

Both of the operations are followed by more congestion of the conjunctival and connective tissues than in simple enucleation, but rarely enough to interfere with kindly healing.

The stump secured by these operations fills out the orbit so well, that with a properly fitted art eye it is quite difficult to notice a difference in the eyes. The improvement over the simple enucleation is so great and so comforting to the unfortunate patient, that it seems now to be incumbent to make a Lang or a Mules in every case where the conditions will allow.

REVIEW.

Ophthalmoscopic Diagnosis of Hemorrhages in the Sheath of the Optic Nerve.—By J. Gonin (*Annals d' Oculistique, February, 1903.*) Many authors, especially the French, take great care in differentiating between cases of sudden blindness due to embolus and thrombosis and those due to an effusion of blood into the intervaginal space, since these conditions are easily mistaken it might be well to enumerate and compare the different ophthalmoscopic findings, and endeavor to determine upon what basis rest the decisive proofs of this differential diagnosis. Magnus in 1874 explained how the symptoms of a hemorrhage into the optic nerve might be mistaken for those due to embolism of the central artery and believed to have found the following differential signs in the two conditions. 1. Hemorrhage of the nerve is followed in some hours by a cloudiness of the retina around the macula and nerve and when due to an embolus it comes on later. 2. Hemorrhage is accompanied by a narrowing more or less marked contrasting with the fullness of the veins, while the diagnosis of embolus implies an emptiness of the arteries and narrowing of the veins. 3. The visual field is affected from the center to the periphery as the result of hemorrhage into the nerve while, on the contrary, it is the periphery which ought to be first affected in embolus. Magnus, in his memoir, has in view those hemorrhages which might occur in the trunk of the optic nerve, while the more recent make allusion to effusions into the sheath, and it is to this circumstance probably that the deduction as to the visual field has not been especially considered by any other author. The appearance of the retinal vessels, on the other hand, has been accepted both by Panas and Rollet as a truly valuable differential sign between an apoplexy of the nerve and embolus. Sureau, in a case of ischemia of the retina in which the arteries were narrow but not entirely effaced, did not hesitate to make a diagnosis of effusion into the sheath rather than embolism of the artery. de Wecker agrees with Magnus where he states in "*La Traité complet*" that, in true cases of emboli the retinal cloudiness appears in from twenty to forty hours after the suppression of the vision, but, that in apoplexy of the sheath they are synchronous. Koenig likewise makes a similar statement. Even, before the appearance of the memoir of Magnus, de Wecker called attention to a symptom of great value in apoplexies of the optic nerve; the presence of flame-like hemorrhages near the edge of the disc or of small hemorrhages surrounding the macula. This condition may also

be present as a result of hemorrhage into the sheath, indeed he even believes that large vitreous hemorrhages may originally have been intervaginal, and suggests the possibility of in this manner of accounting for the condition generally known as retinitis proliferans. It may be considered that there are four generally accepted conditions noticed in the retina as indicative of hemorrhage into the nerve or its sheath: (a) Ischaemia of the retina with more or less complete effacement of the vessels and a milky white opacity at the posterior pole of the eye resembling that commonly attributed to embolism. (b) In addition to an ischaemia of the retina, more or less pronounced, the presence of hemorrhagic extravasations near the edge of the disk or in the macula region. (c) A very abundant sanguinolent effusion which, departing from the border of the disk, penetrates into the vitreous body so as to give the appearance of a profuse intraocular hemorrhage and in its result a retinitis proliferans. (d) An optic neuritis or choked disk as in a case of dropsy of the sheath.

Let us examine first of all what the facts are upon which authors infer that a retro-bulbar hemorrhage can present symptoms of an embolus of the central artery or hemorrhagic retinitis.

1. Cases of ischaemia of the retina. Magnus cites in his memoir as examples of apoplexies of the nerve three observations of ischaemia of the retina which have not been followed by autopsies, but in which the narrowing of the vessels seemed to him to be insufficient to permit the diagnosis of embolus. Aside from this state of relative fulness of the vessels the only reasons that he invokes in favor of hemorrhage into the nerve are theoretical in character and rest upon experimentation. In the second observation of Magnus the retinal opacity was localized at the macula and there existed a corresponding central scotoma. The case was therefore analogous to those that have been described since then as resulting from isolated obstruction of an artery destined to the macula. In one case of ischaemia of the retina, which is the counterpart of this observation of Magnus, but which Pagenstecker gives as an example of apoplexy of the nerve, the visual field was reduced to a narrow slit near the center of fixation and the milk-white opacity of the fundus had occupied all but a small triangular territory between the macula and disk. Many practitioners will see here the effect of an embolus or a thrombus which has affected retinal vessels with the exception of the branch destined to the macula. Pagenstecker deduces a hemorrhage in the sheath of the optic nerve from ophthalmoscopic data alone, discusses at length the location of the effusion but does not give precise reasons for the existence of an

effusion, other than that the arteries are narrowed and the veins are dilated and tortuous. II. Pagenstecker in 1884 describes lesions of the fundus consecutive to hemorrhage as result of a violent blow. In a few minutes the posterior pole assumed an appearance of pearly whiteness and the retinal vessels became narrowed. After some hours and a compressive bandage the color became normal around the disk but the retina remained cloudy at the nasal periphery, followed in a few hours by a detachment of the retina. These fundus modifications were believed to be due to retrobulbar hemorrhage although they might be explained, equally well, by the direct effect of the contusion. Wecker and Masselon give a sketch of an ischaemia of the retina which they say resulted from an intervaginal effusion, nevertheless they make no mention of an anatomical examination to confirm their diagnosis, although their description might be supposed with equal right to apply to an embolus or thrombus.

2. Cases of intraocular hemorrhage. As examples of hemorrhagic effusion of the optic nerve de Wecker described, in 1868, three cases in which hemorrhages were visible at the disk without anything to show that they had taken origin in the nerve or sheath. Under title, "*Hemorrhage of Optic Nerve.*" Weiss has reported a less positive case, as he has for a principal symptom altered veins and arteries of the retina; the veins unusually narrow near the disk only dilate at some distance away, while some of the arteries were transformed into white cords. In regard to a case described by de Wecker and Masselon in which apoplexies, situated near the disk, are supposed to proceed from the sheath and to throw light upon the origin of ischaemia retinae, there do not seem to be facts which would warrant such a supposition, as the retinal vessels can readily explain the presence of the retinal hemorrhages, without looking for an extraretinal origin, unless backed up by anatomical proof. Thus far such proof is utterly lacking. On the other hand the author has studied in detail under the microscope, alterations, the ophthalmoscopic appearance of which were in agreement in all respects with a description given by de Wecker of an ischaemia from apoplexy of the sheath: milk-white macula region, and around the disk, pronounced narrowing but not complete emptiness of the arteries, relative enlargement of the veins, gross hemorrhage touching the disk and extending into the retina, flame-like hemorrhagic spots upon the disk and finally fine extravasations of blood in the region of the macula. Serial sections demonstrate beyond peradventure their retinal origin. The conditions would seem to have favored an apoplexy of the sheath, as there existed an abscess of the orbit with con-

siderable tension, and everything led to the belief that the patient died of thrombosis of the cavernous sinus. The real cause of the ischaemia was really an embolus of the central artery. The fact is that out of twenty-four cases of sudden blindness with ischaemia, in which an anatomical examination has been made, there has not been a single one which has as a cause hemorrhagic effusion into the nerve or its sheath. In twenty times it has been possible to demonstrate obstruction of the central artery by embolus, thrombosis or endarteritis, and in four times it was not possible to show the cause. It may well be said that the doctrine of ischaemia of the retina as due to apoplexy of the nerve is open to grave doubts, that it has no anatomical confirmation and rests upon a theoretical basis. It might be well to ask whether these suppositions are probable and whether, in default of direct proof, they are justified by theoretical consideration in agreement with actual knowledge in the domain of ocular pathology. 1. Can hemorrhage into the nerve or its sheath be a cause of sudden and total blindness to the same degree as obstruction of the central artery? Magnus attributed this loss of function to the tear or compression of the fibres by the effusion of blood and he attempted experimentally to reproduce these lesions by injecting blood into the nerve of rabbits but could not even by abundant injections into the trunk of the nerve provoke any modification in the retinal vessels or seriously injure the nerve tissue elements, and, suggested as an explanation, that an injection from a syringe was less energetic than a spontaneous hemorrhage. It is not at all probable that a hemorrhage from the central vessel could suddenly abolish the function of the nerve and tear the bundles of fibres composing it, being protected, as they are, by resisting partitions of connective tissue which likewise ensheath the vessels themselves. When one considers how long a time an optic nerve can sustain the effects of a venous stasis resulting from a meningitis or cerebral tumor it is difficult to imagine how an effusion into the intervaginal space can produce an instantaneous amaurosis. A considerable effusion of blood into the sheath should act more energetically than a hemorrhage into the tissue of the nerve but whence would come so great a hemorrhage? Certainly not from the vessels of the sheath, which are small, and if from the cranial cavity, it becomes no longer a question of sheath hemorrhage. Even admitting a great hemorrhage from an undetermined source into the space, it is difficult to imagine one of such intensity as to immediately obliterate all function to the degree obtained by Magnus by ligation of the optic nerve trunk. The complete abolition of vision in a few

seconds sometimes, so often noticed in cases attributed to embolus seems against the hypothesis of vaginal apoplexy.

2. Is an Apoplexy of the nerve of such a kind as to cause a retinal opacity more rapidly than that which results from embolus? Magnus believed the immediate cause of the milk-white opacity in the retina to be due to a lesion in the continuity of the nerve fibres, because he had seen it appear in a few hours after experimental section or ligature of the nerve trunk. It has been more recently shown that opacification of the retina is not present after ligature unless the central vessels are involved; therefore an apoplexy of the nerve would only be followed by a cloudy retina in case it was sufficient to efface the lumen of the central artery and interrupt the flow of blood in the vessel; its action upon the retina is brought about by the intermediary of an ischaemia, that is to say, in the same manner as by embolus or thrombus of the artery, but there is no reason for supposing that this action would be more rapid in its effects whether due to external compression or by a plug. As the deductions of Magnus rest upon false premises derived from animal experimentation they are of little value.

3. Does the hypothesis of an apoplexy of the optic nerve explain plausibly the phenomena of transient obscuration of vision which precedes the blindness and of the reëstablishment of vision which follows complete blindness in most of the cases attributed to emboli? Can it also be in accord with the fact, sufficiently often observed, of a rapid return of the retinal circulation to a normal state? Magnus not having succeeded in producing a pronounced modification of the retinal vessels even by injecting into the nerve a large mass of blood still claims that a slight hemorrhage can result in a passing obscuration. Either this hemorrhage comes from the central vessels, in which case the circulatory disturbances should have a duration exceeding a few minutes or the slight extravasation takes place in the sheath and, in this case, is insufficient to compress the nerve to the point of producing an ischaemia, even temporary, of the central artery. It is even more difficult to understand how reëstablishment of vision can follow an ischaemia of many hours or even days as the result of an apoplexy of the nerve. This is not possible if the fibres have been torn and if there has been only a compression of the nerve and vessels it implies an effusion with tension much out of the ordinary. Under such conditions it is hardly probable that shrinking of the clot can in a few hours relieve the central vessels because, being at the center, they will be the last to feel the benefit. Admitting that a hemorrhagic effusion, after having caused a complete ischaemia by compressing the vessels,

undergoes a modification which permits a partial reëstablishment of the circulation: do the retinal vessels take up their normal appearance? This is hardly probable as the *vis a tergo* of the arterial blood being superior to that of the venous blood, and the wall of the artery being less compressible than that of the vein, it must happen that the permeability of the artery will be established before that of the vein, and the arterial blood entering the eye, even as a very thin stream, will necessarily set up a congestion of the retinal veins. The gradual return of the retinal circulation to the normal after the stage of ischaemia, presupposing an apoplexy of the sheath, is as little satisfying as an explanation based upon shrinking of the clot, dissolution of a thrombus, etc.

4. Is it probable that hemorrhage into the sheath has for a frequent symptom peripapillary hemorrhage? Leber has injected fluid into the sheath under pressure and has always found it stopped by the lamina cribrosa. Hemorrhage sufficient in degree to strongly distend the walls of the sheath has never been known to pass beyond the lamina cribrosa. Axenfeld has seen, in a metastatic pneumonia, the vaginal spaces occupied by the pneumococcus in great numbers without ever having been able to detect direct propagation from the sheath to the interior of the eye. Although such a path of communication may seem to have been proven clinically, anatomically it would still remain an enigma.

5. Can the frequency of spontaneous hemorrhages of the optic nerve and sheath bear any relation to the frequency of causes of obstruction of the lumen of the artery? Magnus is convinced that the majority of the cases described as embolism are in reality apoplexies of the nerve, a frequent happening; the facts prove differently. The spontaneous effusion of blood in the sheath of the optic nerve is rare, and it is difficult to discover, in ophthalmic literature, a single authentic case nor has the author been able to find a vaginal hematoma although he has examined many hundreds of eyes enucleated for very diverse affections. Hematoma of the optic sheath is almost always of extraorbital origin, as fracture of the skull, cerebral hemorrhage, and is accompanied by unmistakable symptoms. Latterly obstruction of the central artery has been frequently noticed, proliferating endarteritis being likewise mentioned as a determining cause. Why have recourse to so rare a condition as apoplexy of the nerve, in absence of anatomical proofs, with, on the other hand, embolus, thrombosis and endarteritis as probable factors? Clinical and anatomical data combined are so rare that a study of the train of symptoms set up by an

hematoma of the optic nerve might prove interesting. Priestley-Smith has recognized ophthalmoscopically no change in the appearance of the optic disks. Elschmig's three examinations have been equally negative, and a fourth has only revealed a slight papillary hyperaemia. Talko found the veins hyperaemic with a hemorrhagic effusion in the vitreous which evidently had its origin in the rupture of a retinal vessel. Schnaudigel has seen two optic disks that were reddish and slightly swollen, with veins a little tortuous and small hemorrhages along the vessels, the arteries, however, preserved their normal caliber. Uthoff reports two cases analogous to the preceding; individuals who, as the result of blows on the head, had lost consciousness. The autopsy showed profuse intercranial hemorrhage with participation of the optic sheaths. This hematoma had only caused during life a hyperaemia of the retinal veins, radiating hemorrhages in the retina and slight swelling of the papilla, but no pronounced retraction of the arterial branches, still less a state of ischaemia comparable to that of obstruction of the central artery. As in the observation of Talko there existed no relation of continuity between the intraocular extravasations and that of the optic sheath. In none of these cases did the ophthalmoscopic findings suggest emboli. The examination of the visual function was difficult on account of the state of stupor of the patients. The only sign of an apoplexy of the sheath consisted in a low degree of papillary stasis with or without hemorrhages along the retinal vessels. Facts and theoretical considerations are wanting to support the teachings of Magnus or de Wecker regarding the ophthalmoscopic appearances in apoplexies of the optic nerve. On the one hand there is not a single case of sudden blindness, presenting a picture of ischaemia of the retina in which the autopsy has shown an effusion in the sheath or substance of the nerve and on the other hand there is not a single one of the verified cases of vaginal apoplexy which has presented ophthalmoscopic appearances of obstruction of the central artery. Besides an effusion into the optic sheaths is extremely rare and supposing even that it is produced and has as a consequence complete abolition of vision, which is far from being proven, it would not explain the phenomena that are commonly ascribed to obstruction of the central artery as for example the suddenness of the amaurosis, the rapid development of the retinal opacity, the transient and premonitory obscurations, the partial reëstablishing of the arterial circulation and the tardy appearances of retinal hemorrhages, still less the localization of these phenomena in a sharply defined sector of the fundus, so often noticed. The hypothesis of apoplexy of the sheath leaves untouched

those problems that a study of retinal endarteritis will go far to elucidate. The author does not think that he is too radical in affirming that this doctrine of retrobulbar hemorrhage, as it has been advanced by Magnus and supported by de Wecker, does not rest upon solid fact, is merely a myth of thirty years' life and today has no rights in ophthalmology. His conclusions are 1. The appearance in an eye that has suddenly become blind, of a milk opacity in the papillomacular region with ischaemia, more or less complete, of the retinal arteries does not admit in any fashion of the diagnosis of effusion in the optic nerve or its sheaths. 2. There does not exist any longer reasons for considering profuse hemorrhages at the border of the disk or in the vitreous body as indicative of an apoplexy of the sheath. 3. A slight degree of papillary stasis is the only ophthalmoscopic finding that the facts warrant in considering a symptom of retrobulbar effusion. 4. The absence of all ophthalmoscopic symptoms do not warrant the exclusion of the possibility of a hemorrhagic effusion, even abundant, in the sheath of the optic nerve. 5. Unless a hematoma of the sheath is complicated with a grave lesion as fracture or cerebral hemorrhage it is still difficult to determine what visual disturbances may be caused by it.

WM. DUDLEY HALL.

THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY.

VOLUME XII, No. 5.

CHICAGO, MAY, 1903.

NEW SERIES.

REPORTS OF SOCIETIES.

REPORT OF THE MEETING OF THE CHICAGO OPHTHALMOLOGICAL AND OTOLOGICAL SOCIETY HELD TUESDAY EVENING, MARCH 10, 1903.

BY BROWN PUSEY, SECRETARY.

The president, Dr. Charles H. Beard, in the Chair.

Dr. E. F. Snyderaker exhibited a *case of anomalous or reversed direction of the retinal vessels on the optic disc.* The young woman came because of poor vision. The retinal vessels of the left eye, in which the condition is most marked, emerge from the optic nerve near its inner border. The superior and inferior temporal veins and arteries, instead of taking the usual direction, extend toward the nasal portion of the retina, and hold that course until they are about a papilla-diameter from its border, then they turn sharply about and are distributed in the usual fashion. R. V. = 20/50 with —3.50 Cyl. Ax. 165°. L. V. = 20/50 — with — 3.00 Cyl. Ax. 15°. This is the tenth case of this kind he has examined in the last three years, so it is not an uncommon condition. Dr. Snyderaker has always found the vision to be more or less defective where it is present. It is apt to be associated with a marked refractive error, myopic astigmatism being the most common one in his cases. In the great majority of these cases a cone downward from the optic nerve is present. In many the physiological cup is displaced inward or downward. He has been unable to find any mention in the English literature of the condition. In the German literature Fuchs incidentally speaks of it, Salzmann and Elschnig mention it and describe microscopical sections of eyes where it was present.

Dr. Charles H. Beard showed two cases with *coloboma of the optic papilla.* In each case the defect was situated temporarily. One, a girl aged sixteen, in whose eyes, in addition to the anomalous nerve-head, there was congenital absence of chorioid and retina outwards. The latter in the right eye was more than twice the size of the disc,

and in the left not more than one-sixth as large as the disc. There were nystagmus and a medium grade of myopic astigmatism. The other case was that of a young man in whose eyes the temporal clefts existed without any other trace of colobomata. Central vision was, of course, lacking with the girl while, with the young man, contrary to the rule in such cases, with correction of his three diopters of myopia, it was 20/15.

Dr. Beard has for many years been making ophthalmoscopic drawings, and he has been impressed with the number of instances of this nature that he has seen. Their chief features are as follows: The nerve-head is small, it enters the globe obliquely from within outwards, thus causing the disc to appear foreshortened. The great bulk of the optic nerve fibres are pushed to the nasal side, and appear as a pink crescent, the remainder of the oval papilla showing as a white cleft. No branches of the retinal vessels occupy this cleft, though often small posterior ciliary twigs are seen therein. Crescentic coni are usually present. The choroid is poorly developed, and the pigment in the hexagonal cells is sparse and irregularly distributed; "powder-grain" fundus. Such eyes are ametropic, the error oftener being myopic astigmatism or a low grade of myopia—seldom or never true axial myopia with Scarpa's staphyloma. A few are hyperopic. A vast majority are amblyopic. If the blind spot be carefully outlined it is found to be elongated towards the fovea centralis. This drawing out of the blind spot is not caused by the presence of a conus, but may be explained by the fact that the cortical portion of the nerve-head is situated nasally, and that before the upper and lower streams of the temporal nerve fibres can flow together they have passed beyond the outer border of the disc, or, at any rate, there exists there a notch in which the percipient elements of the retina are lacking.

Dr. F. A. Phillips presented a case with an *ulcer of the cornea*. The ulcer was covered by a sebaceous material which did not stain with fluoresceine. He also showed a case of *kerato-irido-cyclitis* with peculiar infiltration of the cornea.

Dr. George F. Suker showed a patient with an *extensive detachment of the retina with a large hemorrhage into the vitreous and the retention of some vision*.

Dr. Young reported a case of *uveitis with membranous (?) exudate in the anterior chamber*. A woman, aged 22 years, married five years, two miscarriages, dysmenorrhic, was attacked suddenly with pain and a sensation of something in the right eye on the night of

January 25th, (the second day of menstrual period) and this continued steadily until the morning of January 27th. So convinced was she of the presence of a foreign body that the inability to find one was a distinct disappointment to her in more senses than one. There was considerable pericorneal injection, lachrymation and photophobia. The iris was slightly discolored, not dull; and the pupil was free and not different from that of the other eye when exposed to light, although in a shadow it did not expand. In the upper pupillary area there was a small spot of pendant opacity lying upon or just in front of the lens capsule. T. + ? a trifle tender. Vision was but little disturbed. Under scopolamin the pupil dilated to almost 5 m.m. horizontally—vertically about 4 m.m., but the pain was not relieved. Atropine and hot bathing was then ordered locally, and salicylate of sodium in ten grain doses internally for its anodyne effect. She had a good rest that night after taking six doses of the salicylate. On the 28th the condition was not materially different. On the 29th, the opacity on the capsule was larger and was thought to be an inflammatory exudate. The salicylate regularly every hour or two (to the extent of 100 grains per day) in half a glass of water, to which a teaspoonful of whiskey was added, because the dose had become nauseous. She was not seen on the 30th: but on the 31st she felt all right, but she could see nothing out of that eye. The pupil was dilated as before, but the pupillary area was entirely occupied by a dirty white exudate, which laterally, a little at both sides, lapped over the pupillary edge of the iris. On the following day this overlapping extended so that there was an irregular web-like band 3 m.m. wide clear across the anterior chamber from periphery to periphery, with apparent filamentous attachments at both extremities to the iris. No hypopyon and no descemetitis.

The treatment was continued, and two days later it could be seen that the exudate was being absorbed. On the 8th only a small spot remained in the center of the pupil, which was now 7 m.m. in diameter and round. On the 12th the exudate had all disappeared. T. — 1., and the eye was whitening out. On the 18th the conditions were so favorable that she was allowed to go to her home in an adjoining state. T. — 1 ? V. 20/100, vitreous a little hazy. She was to take the salicylate and Warner's Compound Salicylic Elixir alternately—two days of the one and two days of the other, until the eye had become clear.

Commenting on this case, Dr. Young said it was the third of the kind that he had seen in twenty years' practice and that the

clinical picture could not be duplicated in any literature at his command. The other two cases of this character he saw five and six years ago, respectively. One was in a man about thirty years old, of notoriously immoral habits, while the other was in a married woman of forty years, of irreproachable character. Both made good recoveries without salicylate. Morphia was the anodyne; and K. I. the absorbent; but the pain was not thoroughly allayed and the absorption was not so rapid as in the last case. Etiologically, he suspected that each of these cases was an expression of an old gonorrheal infection.

Dr. Hotz reported a case of *iodoform dermatitis after enucleation*. In commenting on this case, Dr. Wescott asked why such an offensive substance as iodoform should be used in dressing such cases.

Dr. Cassius D. Wescott showed an *orbital sarcoma* and exhibited histological sections. The patient was a farmer, aged 48, who presented himself February 2nd, 1903, complaining of a bulging eye, which was almost blind and at times painful. He began to complain of pain in the apex of the orbit in April, 1902. The right eye had been getting more prominent since. On examination, there was great exophthalmos, tending outward, the eye projecting perhaps a centimeter and a half beyond the normal plane. The conjunctiva was quite hyperemic and somewhat edematous, the vessels being very large and tortuous over the inner aspect of the globe. The vision of the right eye was equal to counting fingers at a distance of one foot; that of the left, 6/7, without correction. The ophthalmoscope showed an enormous choked disc in the right eye. The left eye was normal. On February 4th the right eye was enucleated and the orbit was completely eviscerated. Ten days after the operation nodular masses were seen in the apex and floor of the orbit, and there was considerable discharge. The cavity was thoroughly curetted and cauterized with the Paquelin cautery. The patient is still under observation, and, since the curetting, has had x-ray treatments. The discharge has ceased, the orbit is lined with what appears to be normal granulation tissue and there are no nodules presenting at any point. The tumor was found to occupy the muscle cone, pressing the optic nerve against the inner wall of the orbit. The sections, both of the tumor and of the masses curetted ten days after the operation, show a mixed round and spindle-cell sarcoma.

Dr. J. E. Colburn exhibited *specimens of sarcoma of the choroid*.

Dr. Thomas Faith showed a case of *pseudo-glioma* and a case with great *proliferation of pigment cells on the capsule of the lens*.

ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY.

INDIANAPOLIS, April 9, 10, 11, 1903.

Dr. J. Elliott Colburn, M. D., of Chicago, read a paper on *Clinical Experiences in the Treatment of Phorias and Tropias*, giving a history of eleven cases of the phorias, in most of which tenotomies were performed. He suggests the use of bromide of sodium in ten-grain doses three times a day and if true heterophoria exists the results of the test will become uniform. He discussed the value of the rest prism and the development of the latent or total error and the part played by the construction of the head, the expression and pose. If the prism be not only tolerated but a slight increase accepted, a greater and greater amount may be brought out by slowly adding $\frac{1}{2}$, 1, 2, or more degrees, always keeping a little below the error shown at the last reading. Training the muscles by prism or otherwise does not count for much, owing to asymmetrical formation and direction of the orbits. He considers that in phorias advancement is a better operation than complete tenotomy. He corrects the total lateral error as shown by the rest prisms, by advancement or tenotomy, but uses the graduated tenotomy in low degrees of cyclophoria.

Discussion.—Dr. Ferd. C. Hotz, Chicago, emphasized the necessity of thorough examination of these perplexing cases before attempting operation.

Dr. W. L. Dayton, Lincoln, Neb., believes in phorias, but there is no operation that will answer in all cases.

Dr. Hotz fully acknowledges the existence of heterophoria and is not opposed to operation where needed.

Dr. Colburn (closing discussion) would criticise tenotomy on the inferior rectus muscle. You cannot regulate the effect either by advancement or tenotomy.

Some Points in the Operation for Cicatricial Ectropium.—F. C. Hotz, Chicago.—Dr. Hotz said that the results of blephoroplastic operations are often hideous, and the lid is often everted again after a short time. This can be avoided by attention to the following points: 1. The proper division and fixation of skin flaps. 2. The selection of the most suitable material for covering the lids, and 3. The shortening of the overstretched lid border.

The greatest difficulty is the tendency of the shrinking skin flaps to evert the lids again. It is almost inevitable as long as the transplanted flap is attached to the non-resisting lid border on the one

side and the non-yielding skin of the forehead or cheek on the other side, because the lid border is exposed to the full traction force of the shrinking flap. It is easier for the flap to draw the lower lid down than the skin of the cheek up. This can be overcome if, instead of covering the whole wound with one skin flap, we make use of two flaps: a small one to cover the lid surface only and which he calls the lid flap, and a larger one which is to be spread over the remaining wound area, and if we make provision that the contraction of the larger flap can have no effect on the smaller lid flap. In ectropium of the upper lid this point is gained if the upper edge of the lid flap is firmly attached to the upper border of the tarsus, while its lower edge is united with the free margin. The lid flap is thus anchored above and below to the tarsus and its contraction cannot turn the lid over, because the traction force, to do so, must have a fixed point of purchase outside the lid. The shrinkage of the other flap, with its point of purchase outside the lid, cannot disturb the position of the lid margin, because its pulling force is expended on the upper tarsal border. In ectropium of the lower lid the same principle is adopted, but it must be borne in mind that the tarsus of the lower lid is very small and the lid skin normally reaches down farther than the lower border of the tarsus. The normal boundary line between the lid and cheek must be re-established by the division and fixation of the skin flaps; the lid flap must not be united with the lower border of the tarsus but fastened to the tarso-orbital fascia in a line a little above the infra-orbital margin. A good material for the lids is the cicatricial skin usually found in the immediate vicinity of extensive ectropium. It makes a perfect lid skin. In the upper lid it can sometimes be used when the eyebrows are absent, but if not available, a Tiersch graft is the only suitable material.

The shortening of the elongated border of the lower lid: The reposition of the everted lower lid cannot be perfect and permanent unless the over-stretched lid margin is reduced to its proper length. He regards this as an essential point in cicatricial ectropium.

If the eyebrows are absent and there is a good expanse of cicatricial tissue above the everted lid, cut from this cicatricial skin 5 mm. above the inner canthus obliquely upward and then continue in a curve downward to a point about 5 mm. from the external canthus. This flap is carefully dissected up as far as the lid border. The lid is then released by dissections until it can be easily turned down into normal position, and the edge of the flap is fastened by silk sutures to the upper border of the tarsus. If on account of the eyebrows the

flap cannot be taken from the cicatricial skin, after the reposition of the lid we cut from the arm a Tiersch graft of suitable size, which is transported on the razor directly to the lid. The sutures must be inserted with great care to make sure the edges of the flap do not roll in. After the lid flap is fastened, the lid is drawn down as far as possible and held in this position by two ligatures passed through the free border and fixed on the cheek by plaster strips for the purpose of immobilizing the lid during the healing process and also to enlarge the wound above the lid to its fullest capacity. Over this wound a Tiersch graft is used, spread out so the edges lap over the surrounding skin, no sutures being used. In the lower lid we can always secure the cicatricial skin, but as it shrinks considerably, care must be taken to secure a flap of liberal dimensions. (This essay was profusely illustrated by the author by black-board drawings.)

Discussion.—Dr. Casey Wood, Chicago: The main thing is the selection of the kind of skin. If taken from the arm a Tiersch graft and not a Wolfe graft should be used as hair will assuredly grow upon a graft from this location. He removed a large angioma from a child and it was necessary to consider the ectropium, and the skin removed at that time had involved the whole length of the lower lid, and a Wolfe graft was made use of. It took nicely, but now an inelegant appearance brought about by the growth has to be dealt with. He advises the use of the Tiersch graft. They fulfill all requirements, and we do not get the unfavorable results we find in thicker grafts from other parts of the body.

Dr. Oscar Dodd, Chicago, has never had any trouble in using Tiersch grafts in the upper lid. In the lower lid it is not always possible to get cicatricial tissue of the desirable size for transplantation and Tiersch grafts in these cases are useless. Perhaps by the method of Dr. Hotz in anchoring the difficulty may be obviated. The Wolfe graft if prepared very thin, has the disadvantage that it is never like the skin of the face or lid and will remain at least for years, of a different color and can be distinctly seen. As for pedicle grafts from the temple and cheek, there are cases where it is impossible to get as good results as we wish in the restoration of the lids without them.

Dr. George F. Suker, Chicago, said that if Dr. Hotz did not have exact coaptation, and if the upper flap did not overlap the lower, but would leave a narrow line of granulating surface between the flaps, he would avoid any depression or contraction.

Dr. D. T. Vail, Cincinnati: Operation would not, perhaps, be

applicable in that form of ectropium which involves the inner canthus of both eyes; where the nose has been burned off almost entirely and the inner canthus of each eye has been drawn so badly there is only a small space at the bridge of the nose. Dr. Hotz' operation would not, perhaps, be applicable. This is generally a double affair. In this restoration at the inner canthus you have a crescentic form of exposure and it would seem a piece of skin laid in there would give satisfactory results, but it will not. To have a good result it is necessary to anchor the upper lid to the lower lid at the inner corner in such a way that you have a horse-shoe-like exposure of tissue. The main thing about the whole operation is in following the suggestion made about taking up the slack of the lid, and unless you take that slack up fully a third your operation will be a failure.

Dr. J. Morrison Ray, of Louisville, Ky., has found it a great advantage when transplanting flaps to first bare the edge of the eyelids and sew the two lids together.

Dr. A. E. Bulson, Jr., Ft. Wayne: To prevent the necessity of shaving, it is Dr. Bulson's experience that grafts taken behind the ear, are less apt to have this hair. It is not possible to always get a large portion but it is better than grafts taken from other parts of the body.

Dr. Hotz (closing discussion) emphasizes the careful selection of the proper materials. (Here Dr. Hotz showed photographs of cases operated on by other methods with unsatisfactory results). Cut Tiersch grafts as thin as possible, just the epidermis, just deep enough to get live cells, and not hair follicles. Do not transplant hair follicles and you will not have hairs in the flaps. If in the lower lid cicatricial tissue is not available, he would use Tiersch grafts. He has done the operation a number of times. The upper lid moves nicely up and down and no furrow is present. Dr. Suker seemed to have misunderstood him in what he said in regard to allowing the upper flap to overlap. That is done to prevent the rolling in of the flaps. These Tiersch flaps have a tendency to roll in. If so fastened they will not do it. In changing the bandage the overlapping portion is simply pared off. He forgot to mention that to leave a granulating line along here would have no advantage. If we fasten that flap firmly to the tarsus we know it will unite. If we leave it to granulation we trust to uncertainties.

Dr. Adolph Alt, St. Louis, Mo., read a paper entitled *Episcleritis*. Dr. Alt has seen a number of cases in which during the progress of

the disease elevated spots were formed which looked exactly like phlyctenae, semi-transparent, and as if filled with a muddy, yellowish liquid. Such a nodule may disappear and subsequently more nodules may spring up and this nodule formation sometimes travels gradually around the periphery of the cornea. The disease is very slow in its course and with the continually renewed eruptions may cover many months and years. If the disease has attacked the circumcorneal tissue this whole area becomes stretched and the result is annular staphyloma. This form is always combined with a more or less localized or a general affection of the uveal tract. It is more frequently seen in very young children than in adults. Although rheumatism, gout, tuberculosis and syphilis are mentioned as a cause, Dr. Alt has been unable to convince himself of a general diathesis which might underly this local affection. He believes that the superficial episcleritis is a disease *per se* and distinct from the deeper scleritis. He also agrees with Schlodtmann that it is probably a special myotic disease, the parasite of which may some day be found. Pathological research has not succeeded in throwing much light on the nature and etiology of the disease. Anti-rheumatic and anti-syphilitic remedies, although having a beneficial effect in some cases are unreliable as far as curing the disease is concerned. Subconjunctival injections of solutions of different mercurial salts and pure salt solutions have sometimes a beneficial action, but in some cases seem to aggravate the disease. Pilocarpine, locally, subcutaneously and internally sometimes does well, as do heat and cold, but their efficacy seems to give out after a little while, whether we combine them with mydriasis and rest in a dark room or not. Massage with yellow oxide of mercury, aristol or salicylic acid in the form of ointments is decidedly beneficial to a certain point, and then disappointing. The inspersion of calomel has given excellent results. Mercurials have now and then a good effect in the deep seated scleritis.

Discussion.—Dr. D. S. Reynolds, Louisville, Ky.: As the sclera is not disposed in layers, Dr. Reynolds cannot conceive of a superficial or deep seated scleritis. Along the course of the blood vessels is most likely to be the seat of gummatous deposits. He thinks a large proportion of the cases are inherited syphilis, beginning as a gummatous formation on the uveal surface. He has not seen it in acquired syphilis, but in children the subjects of inherited syphilis innumerable times. He employs mercury in small doses, strict attention to diet and habits of life, with the design of improving the condition of the patient.

Dr. J. O. Stillson, Indianapolis, Ind., thinks that the association of episcleritis with the rheumatism and gout is a coincident rather than a cause, and disagrees with Dr. Reynolds about it being in so many instances a specific disease.

Dr. J. A. Donovan, Butte, Mont., has never been able to connect this disease with syphilis either directly or indirectly. His treatment consists of calomel in increasing doses followed by phosphate of soda.

Dr. George F. Suker, Chicago, is a firm believer in large doses of salicylate well diluted with water. In addition he uses atropine and hot fomentations.

Dr. C. L. Minor, Springfield, O., recently saw two young ladies, aged respectively 18 and 20, with involvement of the sclera. He referred them to the family physician. There was no history of syphilis in either family and no gouty diathesis that could be found. They both had some derangement of the female organs which required operation for correction and soon after the scleritis disappeared and up to the present time has remained cured.

Dr. J. E. Colburn, Chicago, Ill., has noticed that the most severe exacerbations usually came, as in chorioiditis, in the spring, beginning in March and continuing during April and May. One patient invariably had a return of the attack during these months, and at Dr. Colburn's suggestion she went to California about mid-winter four years ago and escaped the recurrence. Since then she has had no return of the conditions. She had the colored spots on the sclera.

Dr. Alt (closing discussion): It has been the custom to call the tissue which lies upon the deep scleral tissue and is connected with the conjunctival tissue the episcleral tissue. And as the inflammation lies in the tissue which unites the two together it is usually called episcleritis. In these cases there is no inflammation to be found in the uveal tract. As regards syphilis being the underlying cause in most cases, in what disease can we not find it in the family? How can you prove it and how can you disprove it?

Paresis and Paralysis of the Muscle of Accommodation.—Dr. George F. Suker, Chicago, presented certain anatomical physiological facts based upon the experiments of Hensen and Voelckers, Hess, St. Bernheimer and others, which go to prove that the function of accommodation may be paretic or paralytic without being associated with iris paralysis or extra-ocular muscular complication. He has outlined Kahler and Pick's as well as Hensen and Voelcker's arrangement of the third nerve nucleus. They go to show that there is a separate center in the third nucleus for the act of accommodation, pupillary

reaction and extra-ocular muscle function. He speaks of the varieties of paralysis or paresis, and that the same may be central, peripheral or orbital. He limits himself, however, mostly to the peripheral varieties. In this connection he dilates upon the paresis and paralysis of accommodation following such causes as glaucoma, injuries to the eye, over-exertion, defective teeth and poisons. Under the heading of infectious diseases, he describes this condition of the accommodation in syphilis, influenza, diphtheria and the like. He also mentions this condition in some general diseases, as malaria, typhoid, dysentery, measles, scarlet fever, multiple neuritis and scorbutus. In the paper Dr. Suker expresses the opinion that the paralyzes and pareses accompanying infectious diseases depend upon the influence that the toxins have upon the peripheral nerve terminals. He speaks of a neuropathic and a myopathic variety of paresis or paralysis of the accommodation. He distinguishes between an active and a passive variety and assigns his reasons therefor. He lays considerable stress upon this condition of the accommodation following diseases which entail great muscular enfeeblement or nerve exhaustion. Under the heading of diphtheritic paralysis he shows that the antitoxin does not mitigate the attack nor does it act as a preventive; on the contrary, he seems to think that since the use of antitoxin accommodative paralyzes are somewhat more frequent than heretofore.

Dr. Suker has pointed out the fact that paralysis or paresis of the muscle of accommodation is only recognizable when it exceeds the amount of latent accommodation characteristic of the age of the patient in whom it occurs. Therefore it is only of value as a diagnostic feature when it occurs in a pre-presbyopic. In order to make the diagnosis of paralysis or paresis, you have to take into consideration the range of the accommodation of that patient. In the aged there may be a complete paralysis, yet not recognizable by any means of examination at our disposal.

Discussion.—Dr. D. S. Reynolds, Louisville, Ky.: Dr. Suker has overlooked the fact that some people have the voluntary power of controlling the pupillary motion and the accommodative function. Rosier of London, whose *Treatise on Physiology* was published in 1824, was able to dilate his pupil at will and exercise the accommodation.

He did not agree with Dr. Suker that in the paralysis of accommodation in diphtheritic cases the prognosis is always favorable. Of course it may be argued that the diphtheritic poison was not the sole cause of the paralysis, but the fact remains as tending to show that the prognosis is not always favorable.

Dr. Adolph Alt, St. Louis, had never seen such a paralysis that did not get well in the course of a number of weeks. He differed from Dr. Suker in his opinion that none but diphtheritic sore throats cause paralysis of accommodation. He has a number of cases where the bacteriological examination, the symptoms and the history of the case did not prove diphtheria, and where after a few weeks' standing paralysis of the accommodation occurred. He is satisfied that there are some infections of the tonsils and fauces that may cause paralysis of the accommodation that are not purely diphtheritic, or so little so that it was not possible to find the bacteriologic evidence.

He believes that the child who has diphtheritic paralysis should be carefully looked after, for fear of more important pareses supervening.

Dr. Ferd. C. Hotz, Chicago, thinks that Dr. Suker applies the treatment of paresis and paralysis to a number of cases or conditions in which it is not proper. He speaks of paresis of the accommodation following diseases that exhaust the system—typhoid fever and others. It is true that after an exhaustive disease most people cannot use their eyes for close work very long; if they are presbyopes, not at all; but the question is, is it proper to speak of such conditions as paralysis? Paresis means simply a low grade of paralysis. These people are unable to keep their eyes converged very long. Perhaps we should speak of insufficient converging power. Paralysis refers to the nerve—to a reduced or limited supply of nerve force to the muscle. After such diseases the nerve is all right. It is the muscle which cannot act under the same nerve stimulus. The muscles cannot maintain the work required of them with the nerve force applied. These people cannot walk very long. Certainly no one speaks of their legs being paralyzed or parietic. This paper would lead you to speak of paralysis or paresis of accommodation under conditions where no such thing has existed.

Dr. Thomas Faith, Chicago: Dr. Suker makes the statement that the pupil and the accommodation are not associated. This may be true in a limited number of cases, but our modern text books of physiology teach the opposite.

Dr. William E. Gamble, Chicago: The question of drugs producing paresis of accommodation has not been dwelt upon. A man consulted Dr. Gamble with paralysis of accommodation which had existed for several weeks. The case was examined carefully without finding any cause for the trouble. It was discovered he had been taking a drug for some weeks and he was asked to return and bring his

prescription. This showed that he had taken 1/96 of a grain of hydrobromate of hyocin every two hours, which was discontinued and the accommodation improved.

Dr. J. P. Worrel, Terre Haute, Ind., had a patient who had deficient range of accommodation on one side. She was unable to use her eyes for reading and sewing. The manifest hypermetropia was greater upon the side on which the near point was removed, but a careful study under mydriatics showed there was no difference in the refraction when the total hypermetropia was corrected. Her accommodation was restored.

Dr. H. H. Brown, Chicago: Dr. Alt made a very important statement when he takes issue on the necessity of pharyngeal involvement. A case which consulted Dr. Brown with complete paresis of the accommodation, but had been in school constantly until the time of isolation made necessary by the outbreak of diphtheria in the family, at which time an adult member of the family died. The little girl was the picture of health and had no evidence of pharyngeal involvement. The paresis was complete.

Dr. Edward B. Heckle, Pittsburg, has had a few cases of tonsillitis followed by paralysis of accommodation where there was no diphtheritic complication whatever. In seeking for a cause of this trouble it is difficult to arrive at a conclusion. In regard to drugs, he had a patient several months ago with complete paralysis of the accommodation who had been using a liniment on her husband, which contained 2 dr. fluid extract belladonna to the 2 oz. mixture. She had absorbed through her hands sufficient to cause paralysis of the accommodation. It sometimes follows the use of a belladonna plaster. He believes the local paralysis sometimes seen is due to a disturbance of the functions of elimination.

Dr. Alt said he did not say he had never seen paralysis of accommodation with pharyngeal involvement, but that it was sometimes impossible to discover diphtheritic involvement in a sore throat. (Dr. Alt cited a case.)

Dr. Suker (closing discussion): It is not necessary to have diphtheria in the throat in order to have the paresis of accommodation, but the diphtheria might be anywhere. "Paralysis is the suspension or abolition of functional power, especially in the nervous system, in which case there is a temporary or permanent loss of the power of motion or sensation, or both, in the part supplied by the affected nerve. Paresis is an incomplete paralysis, especially when not associated with any demonstrable organic lesion—limited to motion and not to sensa-

tion." There are two varieties, myopathic and neuropathic. The myopathic can follow general muscular enfeeblement which you usually get in such diseases as typhoid, malaria, etc. In any muscle which is exhausted the effete materials accumulate and we have exhaustion, paresis. The nerve force may still be there, but the muscle is incompetent to respond to the nerve impulse. The nucleus of the muscle of accommodation is separate from the iris contraction center in the third nerve nucleus. Any one can by practice suspend the accommodation in one eye and maintain it in the other. Palliative glasses are merely to help out and comfort the patient for the time being. The symptoms of a peripheral or central paralysis or paresis are practically the same. To determine whether it is a central or a peripheral lesion depends mainly upon the fact whether the act of accommodation alone is involved or whether it is associated with mydriasis or an involvement of other muscles supplied by the third nerve. If more than the accommodation is involved, excluding mydriatics, the chances are you have a central lesion, for the simple reason that all these centers are so intimately connected that in a nuclear lesion it would be impossible to have one affected and not the other.

Excision of the Tarsus in Certain Forms of Chronic Trachoma. Dr. Casey A. Wood, Chicago. Dr. Wood does not advise this operation in any of the recent or acute forms of trachoma nor in any case where there is a reasonable prospect of an early cure from other forms of treatment. When other remedies, however, have failed and the patient has but to look forward to months and years of suffering with serious interruption of work, in many cases tarsal excision is certainly indicated. Removal of the tarsus in part or as a whole is indicated in those long standing cases of trachoma not amenable to other forms of treatment, in which the lids show infiltration and granulation deposits in the connective tissue of the retrotarsal folds, whether the cornea be affected or not. If the tarsus be thickened and enlarged, the operation is the more urgently indicated. Also if there be disease of the folds without thickening of the cartilage, and the cornea is affected, the operation should be done. Where after an atrophy or cure of previously existing granulations in the tarsal folds, there remain deep seated foci in the tarsus, whether the cornea has escaped or not, removal of the tarsus will give gratifying results. Its success largely depends upon precision in placing the sutures and other details difficult to carry out if the patient is restless. When the operation is done, as it usually is, on the upper lid, the latter is everted so that the convex border of the tarsus is thoroughly exposed. This

is then grasped with two strong toothed forceps at the junction of the middle and the outer and inner thirds of the tarsal margin and drawn firmly upward by the assistant standing at the patient's head. Following as nearly as possible the margin of the diseased area, an incision is made from the outer to the inner canthus through the conjunctiva only. The wound will gape (unless the conjunctiva is bound down by previous mechanical treatment), and the fibres of Mueller's muscle will be recognized. These stitches should now be passed through the bulbar margin of the incision, care being taken to include only the conjunctiva and a few fibres of the sub-mucosa. If more than a mm. in width of conjunctiva is included in the sutures, small symblepharon folds may form opposite each stitch, and if too deeply inserted there will be a noticeable dragging on the lid edges. Once introduced through the lower wound margin, they should be allowed to hang down over the globe, resting on a sterilized towel placed on the cheek. The bulbar conjunctiva should now be separated from the globe a distance of 3 to 5 mm. from the edge of the wound. The forceps may now be removed from the convex border of the tarsus and the lid margin be grasped at its middle point, a horn spatula being passed behind the everted lid. A second incision, running the whole length of the parallel to the lid edge, is now made as nearly as possible in the healthy conjunctiva. The intention is to remove as little of the uninfected mucous membrane as possible and leave as large a portion of the central conjunctiva as is consistent. The spatula is removed, and the lid drawn upward and backward. The tissues are now seized at the nasal junction of the two incisions and the tarsus orbicularis and Mueller's muscle. At this point the anesthetic may be withdrawn and time allowed for the bleeding to cease. Some branches of the arterial supply may have to be twisted, but not much trouble has been had with hemorrhage. The conjunctival sac should now be thoroughly irrigated and the lips of the wound brought together. Care should be taken to exactly place each suture in both wound margins so that it will exactly oppose its fellow when the eye is closed. The bulbar conjunctiva should not be put too much upon the stretch. The middle suture should first be tied. He would advise that the patient be allowed to sufficiently recover from the anesthetic to discover whether the palpebral movements are sufficient and to be sure there is no irregularity at the lid margins. His assistant, Dr. Frank Brawley, has prepared a modification of the black silk (No. 2 black braided) which Worth advises in his advanced operations. The silk is wound on ordinary glass microscopic

slides for convenience in handling, and sterilized by boiling thirty minutes. It is then dehydrated by emersion in absolute alcohol for ten minutes and dried above a Bunsen burner flame. These slides of silk are then dropped into a jar of liquid paraffin containing 25 per cent of vaselin, where they remain until used. An end of suture is drawn out of jar, and the excess of wax stripped off the required suture lengths, by drawing through sterile gauze held in thumb and finger. These threads are somewhat stiff and yet flexible, are easily threaded, never kink, and slip through the tissues with the minimum amount of friction and do not readily tear out of the tissues in which they are placed. The knots are much less liable to irritate the cornea and bulbar conjunctiva. The after treatment is simple. Gentle irrigation of the sac four or five times daily with warm boric acid solution, followed by the instillation of warmed and sterile vaseline acts nicely. The vaseline softens the sutures and protects the cornea. A light bandage is applied over both eyes and order quiet, but do not insist he shall stay in bed. The sutures are removed the fourth or fifth day. In a week or ten days the sac should be examined for granulation tissue or irregular wound margins, which are best clipped off with the scissors. The most important result of the operation is the relief given to the irritative symptoms of the disease; the photophobia, lachrymation, foreign body sensations, etc., soon subside. Pannus is always lessened and may often disappear, thus improving the sight. Finally, when recurrent ulcer of the cornea is to be dealt, a cure of the abnormal conditions behind it generally prevents a return of the disease. He has never seen a single instance of ptosis following this operation in the twenty-two which he has himself operated on. He should also like to enter a denial as to the probability of entropion. Ulcer of the cornea has not been noticed after this operation. He thinks if directions for placing the sutures, and especially if the specially prepared silk be used, no such complication will arise. The production of irregular, symblepharon-like folds in the region of the sulci is an accident that may happen to the careless operator. For relief of this it is best to dissect back the symblepharal attachments and implant mucous membrane or skin grafts to cover the denuded surface.

(Dr. Wood reported a series of cases operated upon by himself.)

Discussion.—Dr. A. E. Bulson, Jr., Ft. Wayne, Ind., has been trying Vose's operation for entropion, and after several failures, has conceived the idea of removing a portion of the old knuckled cartilage. Under a general anesthetic the conjunctiva was dissected up. A very

small portion of the upper border of the tarsal cartilage was removed. The case went on to recovery and the pannus diminishing and vision improved. Some ptosis resulted, but not sufficient to prevent fairly good vision.

Dr. Adolph Alt, St. Louis, Mo., asked what effect the removal of the tarsus has on the remaining granulating tissue. It leaves a strip along the edge of the lid and there is undoubtedly some trachoma in the tarsal fold, although there was not in the pictures. Is there not further growth of the trachoma?

Dr. J. B. Worrell, Terre Haute, Ind., asked whether in making the incision all the tissue between the two incisions is removed and are the two edges stitched together? (Dr. Wood: Yes, where possible.) What was the effect of this upon the cul de sac? Would it reduce that to such an extent that it would limit the movements of the eyeball? Do you remove the tarsus entirely through all the lamina to the muscular tissue of the lid? (Dr. Wood: Every bit of it).

Dr. Wood said in closing the discussion, shall we go on treating these troubles by the usual method, or try to eradicate the foci of the disease itself? He has never noticed any marked increase of the dry sensation, of which the patient usually complains.

As to the removal of the retrotarsal folds he never noticed, except in one case any marked limitation of the upward or downward movements of the eyeball, after the operation. In fact none of the French or German authors who have done this operation make complaint of the limitation of globar movements.

Blepharitis Marginalis. Dr. Dudley S. Reynolds, Louisville, Ky., describes one of the commonest forms of this trouble, in which there is a slight thickening of the borders of the lids, the anterior margins dry and red and the lashes on close inspection observed to be thin, while the cuticle between the hairs is covered by minute scales of desquamating epidermis. This condition is aggravated by loss of sleep and constipated bowels. It is seen to almost disappear under correction of errors of refraction or intestinal constipation. Close inspection will discover a small, sheath-like elevation of epidermis around each hair in the lash. Dr. Reynolds believes this can be entirely eradicated and recovery secured for many by the periodical application of pure carbolic acid, which he accomplishes by dipping a needle in a preparation of pure carbolic crystals in alcohol, and applying same directly to all the hair follicles on the margin of the lid. About the fifth day the crust of epidermis which has exfoliated as a consequence, should be removed and a little yellow oxide of

mercury ointment applied. This should be repeated about every ten days, and in most cases a heavy growth of hair will result. Dr. Reynolds goes on to describe a more distressing condition, having a glazed, red, rounded appearance of the tarsal margins, with no sign of lashes. After application of phenol at intervals of ten days, a reduction of the thickening is secured and a fair growth of cilia appear. Still another class described by Dr. Reynolds is that in which dilated veins are often seen just under the skin. The retrotarsal conjunctiva is relaxed, there is profuse lachrymation and often photophobia. An accumulation of inspissated sebum mats the cilia together. The ulcer should be cleansed and a small portion of phenol applied to the bottom. The lid may now be covered with a piece of gauze dipped in petrolatum and secured with strips of plaster. Careful attention should be given to constitutional correctives. He says many cases are undoubtedly due to inherited syphilis, and that the syrup of hydriodic acid is a priceless remedy in such cases. Most of the ulcers in this class of cases are broken down gummatous formations. These should be dried and filled with the yellow oxide of mercury powder, or a crystal of the red oxide. He does not claim that the application of phenol is to be indiscriminately made, as many complicated cases require distinct modifications in treatment.

Discussion.—Dr. Vail, of Cincinnati, referring to a case of Blepharitis Marginalis of Dr. Reynolds' which he had seen, said that on examining the young lady, he found that there was some desquamation of the epithelium. He applied 20 per cent argenti nitrate to the lash with good results. He recalled seven classes of this disease with which he was familiar, all of which are manifested in the acute and chronic form: The simple, pustular, eczematous, membranous, which is exceedingly violent (he having found the Klebs-Loeffler bacillus), deciduous (which is the case reported by Dr. Reynolds), syphilitic and blepharitis ulcerosa.

Dr. Geo. F. Suker, of Chicago, said he considered the loss of the lashes and thickening of the tarsus a secondary condition. He thinks it would be well to call it eczematous blepharitis. Not every case is due to refractive error; many are hypermetropic. Dr. Suker said he often used the silver nitrate in the same manner described for the use of the phenol, with good results.

Dr. A. Alt, of St. Louis, said he was in the habit of using corrosive sublimate in the same manner.

Dr. Heckel, of Pittsburg, wished to eliminate the word "marginalis" as superfluous.

Dr. Hotz, of Chicago, agreed with the essayist that ointments in the ulcerative forms are useless. Nitrate of silver, 20 per cent, or more, or carbolic acid as described, give him the best results. He has never had occasion to use heroic measures in the squamous varieties. He uses in this case an ointment of yellow oxide of mercury or ichthyol and vaseline. It is impossible for the patient himself to apply ointment properly along the upper lid margin.

Dr. J. W. Murphy, of Cincinnati, said he used 20 to 30 per cent nitrate of silver, as he had no success with the weaker solutions.

Dr. W. L. Dayton, of Lincoln, Neb., reported a case of a young lady with similar symptoms to those in the case described by Dr. Reynolds. The use of citrine ointment failed to relieve and he ordered her watched, with the result that she was discovered to pick the lashes out. She was not allowed to be alone day or night, with the result that she recovered with a good growth of lashes. On going for a visit away from home the lashes again were lost. She was again put under surveillance, with the result that the lashes grew without other treatment. It was a hysterical manifestation at the age of puberty.

Dr. Vail explained that in the case of the patient of Dr. Reynolds' seen by him he eliminated the possibility of its being a case of hysteria. The mother, to whom the possibility was explained, never lost sight of her for a week, but declared it was not possible that she was pulling them out. As he took hold of the lashes with his fingers they would drop out without resistance, without any evidence of pain, such as is exhibited when you draw a healthy lash. He said he had met with hysterical blepharitis, but did not believe this was such a case.

Dr. Stevenson, of Akron, thinks the essential thing in the treatment of these cases is cleanliness. The patient should be instructed not to put his fingers in the jar of ointment. He first cleanses away the scales and crusts to discover if there are ulcers present or mere redness. It is no doubt caused by vascular condition produced by eye strain. He uses 20 to 30 per cent silver nitrate solution.

Dr. Reynolds, closing the discussion. In the case reported by Dr. Vail, he had examined the margin of the lid with the magnifying glass and found there was no evidence of young lashes present, as would be the case where it had been pulled out. He thinks

it necessary for the surgeon to apply the ointment. There is difficulty in the use of nitrate of silver, because of the liability to run over the free border of the lid.

A Series of Glaucoma Cases.—Dr. George F. Fiske, Chicago. Dr. Fiske had prepared a chart showing thirty-five cases of this disease, for the sake of making a few deductions and bringing out practical questions. He thinks it is fair to say that the symptoms are due to an increase of tension, in its turn due to difficulty of excretion as compared with secretion. The point to be determined is the cause for this difficulty of excretion. In his series of cases there is not a single myopic eye, and almost all cases are hyperopic. The small eye is universally conceded to be the one most liable to this disease. He agrees with Weber and Priestly Smith that the difficulty is to be attributed to the small eye and lens of normal size. In these cases the ciliary body is enlarged and the flow of lymph from the vitreous to the posterior chamber is hindered. The veins of the ciliary body becoming too full, the swelling cuts off communication between the vitreous and posterior chamber, and the ciliary body is pushed forward and presses the root of the iris against the sclera at the point of union with the cornea. Dr. Fiske advocates the early iridectomy in all cases of glaucoma, to be followed by a second and a third if necessary. It is at the time of the first attack that the operation is most useful and most likely to conserve the sight. He believes that an iridectomy on the second eye, even when sound, would save many from blindness. The experience in his cases has been that the sight was preserved and the disease checked just in proportion as the iridectomy was early.

Discussion.—Dr. Rogers, of Columbus, thinks there is a growing tendency to perform an iridectomy early in these cases as compared with past years. He said he had operated on seven of these cases covering a period of ten years without cause to regret this procedure in more than one instance, in which latter the woman was past sixty-five years of age, with an atheromatous condition of the vessels. It was necessary to have a general anesthesia. The patient suffered emphysema which resulted in intraocular hemorrhages. She eventually made a fair recovery, retaining vision in one eye, while the other eye suffered diminution of about $\frac{2}{3}$.

Dr. W. H. Wilder, of Chicago. He believes in the efficacy of iridectomy in the acute glaucoma, and in the chronic glaucoma where there are acute attacks. He had a case where the posterior sclerotomy

changed the vision from almost zero to 20/20 in two weeks. This merely illustrates the fact that our theories do not obtain in all these cases. He thinks the thing of greatest importance in the study of these cases is the careful record of the field of vision. Every one has had cases of chronic glaucoma where central vision was normal and the peripheral vision is much contracted. Dr. Wilder described such a case in his experience, where the central vision was 20/40, but he saw as though looking through a gun barrel. An iridectomy was done, but the lens had to be removed piecemeal.

Dr. C. Barek, of St. Louis, said he thought an iridectomy should be performed as soon as possible in acute glaucoma. He told of the experience of a clinic in which pains had been taken to correspond with all the cases operated on. The statistics covered an interval of four or five years and agreed to a considerable extent. The sight had not declined more after the iridectomy in about 50 per cent; it had declined more or less in 25 per cent, and in about 20 per cent there was total loss of the eye. He recommends the early iridectomy, to be followed by eserine, and should diminution of sight obtain, a posterior sclerotomy.

Dr. Dudley Reynolds, of Louisville, concurred with Dr. Wilder as to the importance of making frequent record of the field of vision. It is in the peripheral contraction of the field of vision that we find the first manifestations of increasing danger. Dr. Reynolds thinks a great many operations might be avoided by giving a large dose of Rochelle salts, to be followed after the action of the salts by the salicylate of sodium in the definite dose of ten grains every half hour in a half pint of water, until pain disappears and the tension is reduced. At the time of operation a few drops of adrenaline 1-1000 solution is important.

Dr. J. A. Bradfield, of LaCrosse, Wis., described a case on which he had operated in which the anterior chamber was so nearly obliterated as to make the iridectomy difficult. Recovery was uneventful, but there was a slight cicatrix and he was advised another operation might be necessary. His refraction was corrected, and four months ago his vision was 20/20 with normal tension.

Dr. J. O. Stillson, of Indianapolis, agreed with the others as to the advisability of urging an early iridectomy. Speaking of the technique, he thinks eyes are often lost in the attempt to make an operation in a narrow anterior chamber with the lance-shaped knife.

Dr. George F. Suker, of Chicago, speaking of the pathology,

thought it might be considered a uveitis. He agrees with the essayist in advising operation on the second eye when only one eye has been attacked, as a preventative. He would not use 2 per cent solution of eserine; often 1 per cent is irritating. He thinks when you have a deep anterior chamber an iridectomy will not do much good.

Dr. Alt said he was certain it could not be found to be a uveitis, although we have secondary glaucoma following uveitis.

Dr. F. Hotz, of Chicago, thinks we will never be able to satisfactorily explain glaucoma, because we have two different diseases, which we can call acute typical glaucoma, and the so-called glaucoma simplex. In the one we have periodical attacks or exacerbations and remissions. In the so-called simple glaucoma we have nothing of that sort. In the first class we have the shallow anterior chamber; in the second class the normal and sometimes a deeper anterior chamber. In the first class we have increased tension, and in the second we often cannot find increased tension in the eye. But in the second class you will sometimes find a deeper excavation of the optic nerve. As long as it is attempted to bring all under one head there will be no satisfactory explanation. The pathologists report under difficulties, because they get the eyes in the last stages. When they get the eye it is a secondary process owing to the pressure on the iris by reason of the increased tension. Dr. Hotz endorses the position of the essayist as to performing iridectomy as soon as possible, and not as to operating on the second eye if it shows no glaucomatous condition, because it may not become glaucomatous for ten years.

Dr. Fiske, closing the discussion, said that the purpose of his paper was to make a plea for the early iridectomy. He did not agree with Dr. Suker as to uveitis. He had never had irritation with 2 per cent eserine. He had never seen a case of glaucoma where there was distinctly a deeper anterior chamber than in the normal eye when there were no adhesions between the iris and the lens. He does not think there is normal vision in eyes where there have been attacks of glaucoma.

How to Avoid Secondary Operations After Cataract Extractions—
By Dr. C. Barck, St. Louis. Dr. Barck said he had practiced the peripheric horizontal incision for a number of years, but gave it up on account of the number of secondary operations which it necessitated, and also because there is a certain amount of danger connected with it. For the past three years he has followed another method, which is a return to the old method with some modifications.

He lays stress on the long vertical incision, commencing inferiorly, going with the cystotome between the iris and the lens capsule downwards to the very periphery of the lens, and dividing by an upward movement the lens capsule as extensively as possible. At first he added to this a horizontal incision both right and left, but to simplify the procedure and to reduce the strokes of the cystotome to two, he has devised the following method: The first incision is of a crescentic shape, commencing laterally from the lower end of the vertical meridian; the second one commencing just as far mesially from this, meets the first somewhat above the center of the capsule. It is important that the two incisions really intersect. If correctly carried out the lower triangular flap usually falls downward, and the upper portions retracting leave a clear, central pupillary area. In a number of instances the remnants of the capsule placed themselves so that they just filled out the coloboma left by the iridectomy, which is beneficial from a cosmetic as well as an optical standpoint. In fifty cases he has had to make a discission in 5, or 10 per cent. In two of these the extraction had been followed by iritis, and in consequence of want of proper treatment, a closed pupil. He feels justified, therefore, in recommending this incision.

Discussion.—Dr. A. Alt, of St. Louis, did not think Dr. Barck's method as easy as some others, although he believes it may frequently leave a better scar. He uses the original incision of Knapp, which is T-shaped, but this does not remove the necessity of secondary operations.

Dr. Stillson, of Indianapolis, said he had been in the habit of making a round incision, but the chief difficulty in the last fifty cases is in the membrane or veil which forms.

Dr. Alt said this was the formation of a small membrane which forms at the opening of the posterior capsule which later on obstructs vision.

Dr. Hotz, of Chicago, said the only way to avoid secondary cataracts was to remove the lens within its entire capsule, as it is not the anterior capsule which gives the most trouble. We find this fine veil stretched over afterwards, dusted over with some fine deposits on it as the result of some slight uveitis or hyalitis following the operation. No ingenious splitting of the capsule will avoid operations.

Dr. Rogers agreed with the two preceding him that it is impossible to avoid a second operation unless the lens is removed in its capsule.

Dr. D. W. Greene, of Dayton, said he made incisions at right angles; cut from the bottom upward, then from the temporal side, then change the knife and cut from the nasal side. You have four segments of the capsule which will be out of the way. He thinks this an ideal operation for the prevention of secondary operations.

Keratoconus; Etiology and Importance of Early Diagnosis and Treatment.—Dr. J. A. L. Bradfield, La Crosse, Wis. This paper is limited to the discussion of the typical keratoconus characterized by ectasia of the cornea just below and to the inner side of the optical center. In many cases it soon reaches a stasis, leaving only a slight irregular astigmatism; in others it is more serious, leaving not only a slight cone but great irregular astigmatism with myopia and accompanying low vision. The exaggerated cases have a well marked cone protruding between the lids and almost blindness. It is sometimes found in the rachitic subject but oftener in the nervous chlorotic individual and some fault with the general system is always present, the nervous phenomena common to puberty being the most important. The etiology is unknown.

The treatment should begin by correcting errors in the general health, rest of the eyes from all use requiring prolonged accommodation; correction of errors of refraction. In the early stages local applications of the crystal of alum should, after cocainizing the cornea, be gently passed over it from one to a half dozen times. In more advanced stages, myotics and iridectomy are valuable, but the author prefers cauterization, penetrating the entire thickness of the cornea, subsequently making iridectomy where it will give the best optical results.

Discussion.—Dr. Alt thought if the alum was used strong enough to harden the cornea it would interfere with nutrition and produce sclerosis.

Dr. Suker asked if he considered it identical with keratoglobus, and whether a congenital condition; also in regard to the use of eserine and how long he continued it.

Dr. Griffin, of Ann Arbor, said it seemed to him essential that the refractive error be corrected, especially if the patient is young.

Dr. Wilder, of Chicago, said that when cauterization is resorted to it of course means there will be a scar there which will interfere with central vision. He had one experience with fairly good results, in which he made a crescentic-shaped cicatrix with the cautery knife

at the base of the protuberance through Bowman's membrane. These are difficult cases and one hesitates to sear over that anterior surface.

Dr. Bradfield said, in closing the discussion, that it is his opinion that the center of the cone is simply due to the increased area. He does not consider it a congenital condition. He considers the nervous phenomena of puberty one of the most important factors in the etiology. He said his attention was called to the use of alum through the case of a young man who had had difficulty for some time and been so treated by a colleague with great success. How it does it he did not know. He said it was not worth while to begin treatment unless it can be followed up persistently for several months. He thinks iridectomy beneficial to myotics. It takes the tension from the anterior chamber. He thinks it difficult to properly refract these cases, because there is a different effect at different times, but with a mydriatic and a disc in front of the eye the patient gets the best optical results.

Electro-Cautery Treatment of Corneal Ulcers.—Dr. Jno. A. Donovan, Butte, Mont. If the wound be slight he either gives nothing or a boric acid and zinc wash with instructions to return in twenty-four hours. If there is then any irritation, he touches the spot lightly with the cautery at a very dull heat. This is usually all the treatment required. This has been his practice for three years and with the most satisfactory results, considering time, reaction and suffering. He uses a current transformer and a short, straight cautery point placed in the handle at an angle of 45 degrees. In some cases he does not reach the degree even of red heat. He makes small punctures about $1\frac{1}{2}$ to 3 mm. apart just in the edge of the healthy cornea, also in any part of the floor that appears unhealthy. In the rare cases in which the ulcer does progress in some direction, the advancing portion should again be touched just in the edge of the normal tissue. In wounds of the cornea when it has been completely perforated and is probably not aseptic, he touches the entire margin of both edges of the wound. He concludes that when a corneal wound is severe enough to require treatment, electro-cautery is indicated. With proper appliances in competent hands its effects are absolutely controlled and the results are better than to follow the use of any strong stimulant. The scar resulting is no more and is frequently less than if so-called less radical means had been employed.

Discussion.—Dr. Gamble said that his experience had been that the cause for poor success in treating these wounds that we could not

use irritating solutions and all antiseptics are more or less irritating. Theoretically he feels less danger in the use of the actual cautery than carbolic acid or nitrate of silver. It is his experience that when the cornea is perforated it will usually take care of itself and not become infected. He has never had occasion to cauterize the margins of wounds after perforations.

Dr. Suker called attention to the fact that zinc sulphate and boracic acid are chemically incompatible and therefore you get a precipitate. He thinks the essayist's conclusions are good, and that if the electro-cautery is to be used as a last resort, it can also be used in the first place.

Dr. Bradfield did not believe zinc should ever be used in corneal lesions. He has had experience with the wounds caused in the pearl button works, and uses nitric acid, dipping a wooden toothpick wound in cotton in the acid, which is allowed to dry before applying to the wound. It will turn white and you can regulate the depth you wish to go. He fears that with the galvanic cautery you would penetrate Bowman's membrane and have a permanent cicatrix. He does not use the nitric acid in advanced cases.

Dr. Conkey, of West Superior, said that while he considered the cautery an excellent remedy, it was not always enough in this class of cases, and sometimes the eye has been lost through depending upon the cautery alone. He thinks the wound should be kept open continuously until healed. By opening up the anterior chamber, the fluid passing out seems to have a more powerful antiseptic action than the cautery.

Dr. G. F. Keiper, of Lafayette, believed that the galvanic cautery is the best means we have at present for the treatment of corneal ulcers.

Dr. Stevenson thinks it is best to apply the cautery, and then remove, again applying it and making the operation longer and thus having less danger of heating up the aqueous humor and lens. He remembered a case in his own city where the cautery had been applied too long with a cataract as a result. He called attention to the use of atropine and eserine. He advocates rest and bandage in case there is not too much discharge. He has used nitric acid more frequently than the electric cautery.

Dr. Jos. Titcomb, of Duluth, Minn., said he believed the cautery to be the best single agent we have, and unless the ulcer be central, where there is danger from opacity, he almost invariably uses it.

Dr. Heckle said that while he did not think any one doubted

the efficacy of the electro-cautery he liked the effect of carbolic acid in small ulcers. He uses the protargol, 10-20 grains to the ounce. It is a good germicide with a beneficial effect.

Dr. J. W. Scales, of Pine Bluff, Ark., said he found that locality had a strong bearing on the results of treating corneal ulcers. He thinks if the treatment carried out in the average hospital were depended upon in his part of the country a great many eyes would be lost. The patients have large spleen, liver inactive and a general asthenic condition. With such a patient it is necessary to rouse his secretions, and the most important thing in Arkansas is calomel. He would not hesitate to give 20 to 25 grains calomel in order to secure an immediate effect. Ten to fifteen grains would be the average dose in less urgent cases. Until a reaction is secured, palliative remedies are needed. For this he uses hot applications. He would not attempt to stimulate the ulcer until he gets action of the man's liver. With the use of the cautery one result will be secured in one instance and a different one in another.

Dr. Wilder agreed with Dr. Donovan in his conclusion that if this treatment were good as a last resort it is good as the first in every case. But he does not believe that one should use this rather severe treatment in so simple a thing as a scratch of the cornea from a child's finger. Wherever you burn the cornea you will have a scar, and if this happens to be central it may interfere with vision, and he does not think this should be risked until antiseptic irrigations, etc., have been tried. He relies more on carbolic acid and nitrate of silver in these cases. Another point made by Dr. Wilder was that when the corneal ulcer is deep you will have that little knuckle of the membrane of Descemet sticking up like a little pearl. In spite of cauterizing, this will stick there and prevent the healing of that wound, and it is necessary to puncture this keratocele.

Dr. Donovan, closing the discussion, said in regard to the use of zinc, he uses it one to two grains to the ounce as a rule, and in that proportion it is hardly a stimulant. He said he did not intend to advocate the use of the cautery in wounds which seemed to be doing well, but in case it was thought they were infected. He had used nitric acid on several occasions, but could not recall just what the results were. He thinks everybody with a sore eye should go to bed, but finds it difficult to get his patients to do so. He usually applies the cautery just as you would touch paper with a pencil, and draws it immediately away. He does not use Fluorescence any more. If the ulcer is severe enough to need treatment

it shows where it is. The flourescene will stain normal cornea. He does not consider boracic acid and zinc sulphate incompatible. It makes an absolutely clear solution and you get an astringent effect that you do not get from either alone.

Tuberculosis of the Iris, W. H. Wilder, M. D., Chicago. The author says this disease is manifested in three forms: 1st, solitary tubercle; 2nd, desseminated tubercle, and 3rd, simple, inflammatory tuberculous iritis.

The first affects one eye alone and develops as a small round or oval nodule, usually at the periphery of the lower part of the iris. The color is grayish-red and as it grows it fills the anterior chamber of the eye, much resembling a neoplasm. It may easily be mistaken for a sarcoma. As the growth increases the cornea becomes involved and perforates, allowing the mass to break through. The appearance is similar to that of granulation tissue. It then breaks down and the eyeball gradually begins to shrink as the inflammatory process occasioned by the growth subsides. The eye is of course lost and phthisis bulbi ensues. General tuberculous infection may result.

In the second form, which may occur in one or both eyes, there are at first all the symptoms and signs of an iritis. Soon small yellowish-gray nodules, surrounded by a slightly reddened zone, appear in the iris. Their favorite site is at the root or periphery of the iris. They seem to be constantly changing, some disappearing while others are forming. This predilection for the outer zone of the iris helps to distinguish them from the condylomatous nodules so frequent in syphilitic iritis and which are usually seen at the pupillary margin. Some of these tubercles may disappear completely, leaving small patches of atrophied iris, while others may coalesce, forming larger tuberculous masses that fill in the angle of the anterior chamber. The iris is dull and discolored and flakes of lymph and disintegrated tuberculous nodules may fill in and occlude the pupil. Firm adhesions form between the iris and the lens and the tension of the eye may markedly increase. Ciliary injection is marked and the eye is frequently tender to pressure. The ciliary body and choroid may be invaded and the cornea may be involved. Tubercular meningitis or general tuberculosis may supervene, so that the prognosis both general and local is bad.

In the third form the tubercles are not clinically demonstrable, being situated in the tissue of the iris and not on the surface. It assumes the form of a chronic iritis or irido-cyclitis, which causes

either complete annular posterior synechia of the iris or adhesion of its posterior surface to the lens. The tuberculous nature of the trouble may be demonstrated by excising a piece of the iris and examining it microscopically. Deposits of lime are frequently found in such irides, and even true bone formation has been observed.

All the forms mentioned present the same histological features, *i. e.*, the typical tubercle formation of round cells around a central giant cell. This latter is a large crescentic or round structure with non-granular protoplasm containing near its periphery numerous elongated nuclei. This is a disease of childhood and adolescence. Most of the patients affected have either pulmonary tuberculosis or tuberculous manifestations in other structures. Most have a bad family history, while some have neither a family or personal history of tuberculosis and show no manifestation of it excepting in the lesion of the eye. This would raise the question whether the iritis is primary or secondary to some other tubercular lesion. Many capable observers take the view that it is primary. It is argued that the eye of a sound person may be infected locally through an abrasion of the cornea or through an ulcer, in this manner giving entrance to the bacilli. (Dr. Wilder showed interesting microscopic specimens.)

Discussion.—Dr. Alt said he considered tuberculosis of the eye a rare disease, although seen, possibly, more often than recognized. He thinks the term “infectious granuloma” is better.

Dr. Suker said he had some experimental knowledge of this disease. He makes a small corneal incision and injects the vacilli with a small syringe. In 36 hours you will see a little growth begin and you can watch it nicely. Rabbits are very susceptible to this iritis.

Dr. Jos. Beck, of Chicago, was interested from the histological and pathological point of view, having had the pleasure of seeing tubercular iritis at Graeffe's laboratory as well as in Vienna. He thought the point of distinction between tubercular and syphilitic manifestation made by the writer was a good one, the one being peripheral and the other central. Dr. Beck also called attention to the re-action from the use of tuberculin, which was obtained where there were any pathologic findings.

Dr. Stevenson, of Akron, said that the best differential point was that in the tubercular iritis there is a grayish, translucent color, while in the syphilitic it is a more highly colored red, and even of a violet tinge.

Dr. Wilder closed the discussion, calling attention to the fact

that giant cells are found in many conditions, which may be confusing. In tuberculosis, however, they are round or elliptical, being regular in outline. Another point that the nuclei in the giant cell of tuberculosis are peripheral and usually elongated. Another important differential point is that in the tubercular form you have the growth beginning in the adventitia. He had seen the tuberculin used in the service of Nettleship in the Royal London Hospital with no result, and yet the patient had tubercular iritis and the eye had to be enucleated. Dr. Wilder had a microscopic specimen from this eye.

Mydriatics in Refraction of Presbyopes. O. A. Griffin, Ann Arbor, Mich. The essayist called attention to the contention that had existed as to the propriety of using mydriatics in testing the refraction of adult ametropes, but more particularly in testing the presbyopic ametropes. Dr. Griffin thinks that when a patient presents himself for relief from an ametropic eyestrain, be he young or old, the same difficulties of making an accurate estimation of the refractive condition of the eye, without the aid of a mydriatic, obtain to a greater or less degree. He is convinced, after making several thousand refractions, that the aid of a cycloplegic is not only necessary to the accomplishment of an accurate refraction of the young adult, but may be frequently employed with profit in the testing of presbyopic ametropes. If it is necessary to correct an ametropia at all, why burden the patient with a glass that removes only a portion of his trouble, when every vestige of strain and discomfort might be eradicated? He thinks the danger of the employment of homatropin in presbyopic eyes has been greatly exaggerated by most writers, although as routine practice he uses a myotic to neutralize the effect of the mydriatic. He said that atropin was used in corneal and iridic disorders without a thought of danger, but when suggested as an aid to refraction of presbyopic ametropes it suddenly assumes a potency for harm in the minds of some. He has yet to meet the instance where the supposed increase of tension or any other deleterious condition has resulted from his use of the drug, either as a mydriatic or cyclopegic. He thinks the risk incurred is practically *nil*.

Discussion.—Dr. Bradfield thought it might be necessary to use cycloplegics after 50 years of age in rare cases. But he insists on determining the glass to be given after the effect of the cycloplegic has entirely disappeared. He does not think it necessary to correct small degrees of astigmatism in the presbyope.

Dr. Miner said that he invariably uses in every case of refraction homatropine, without reference to the age of the patient. He has never found increase of tension in a single case, although he has looked for it. He finds patients much better satisfied where the astigmatism is corrected.

Dr. Gamble emphasized the conclusions of Dr. Griffin's paper. He uses the homatropine in every presbyopic case that comes to his office to be fitted, unless there was a contra-indication. He has never found difficulty from its use.

Dr. Stevenson said that he had used the homatropine in his presbyopic work for three years. He has better results by using the retinoscope and is more certain of his refraction.

Dr. Suker said he would like to compliment the essayist on his ability to distinguish between one-fourth and one-eighth of a diopter with the retinoscope.

Dr. Griffin closed the discussion. Referring to Dr. Suker's remark in regard to distinguishing the slight difference in astigmatism, said he did it every time and that it could be accomplished by close study. He makes the subjective test and then the retinoscopic test, and with few exceptions the patient accepts best the findings of the retinoscope. He has found cases at 65 and even 70 years of age where a satisfactory examination could not be made without the mydriatic. It is results he seeks, and with the homatropine has been able to give the highest amount of satisfaction to his patients.

Double Optic Neuritis Complicating Whooping-Cough. Dr. W. E. Gamble, Chicago. Dr. Gamble gave a report of the only three cases revealed in literature by a diligent research, with one of ischemia of the retina coincident with this disease. He then describes a case of his own observation. From these cases he draws the following conclusions: Optic neuritis occurs in girls, beginning about the 14th day of the convulsive stage in half of the cases. Evidence of cerebral trouble was present in half the cases. Ophthalmologic findings in the authentically reported cases shows optic neuritis without hemorrhage in the opticus. Disturbance in the motility of the iris was reported in all the cases, and in three vision was greatly reduced. Perfect restoration to sight occurred in one case, and but little disturbance of sight is probable in author's case. In one case white atrophy followed with quantitative vision.

There is a probability that the cause is not the same in all cases. Modern authors almost unanimously give credit to mechanical in-

fluences, with the accompanying hemorrhage into the brain, cerebral meninges and other circulatory disturbances. The optic nerves may become involved with such complications, when meningitis ensues in the form of a descending neuritis. The consensus of opinion has not settled upon any particular germ as the cause of this disease. Pronounced leucocytosis, or more precisely speaking, lymphocytosis, seems to be the only blood change so far observed. It is possible that fatty changes occur in this disorder in the capillary endothelium of the vessels of the brain and the optic nerve. This infectious disease is characterized by convulsive or spasmodic manifestations. Peripheral neuritis does occur in this disease. In the author's case he thinks it is due to the direct action of the toxins of whooping-cough upon the nerve tissue, which he explains according to Metschnikoff's theory of phagocytosis.

Prognosis as to sight good, when no cerebral complications exist.

Discussion.—Dr. Wilder said that this case occurred in his service at the Illinois Charitable Eye and Ear Infirmary. The peculiar feature was that there should be this disturbance about the optic nerve and yet so little functional disturbance of the eye. It was evidently a case of beginning neuritis. Whether due to the toxins of whooping-cough or due to spasms is but a surmise.

Neurasthenic Asthemopia. Dr. Louis J. Goux, Detroit. Dr. Goux said that neurasthenia is not a disease but a group of diseases—a sort of diathesis with a most varied symptomatic expression. In the large majority of cases degeneracy forms the ground work for the development of the malady. The disease may also be due to accidental causes, such as shock, traumatism, etc. As occasional disorders we have all the circumstances, physiological or pathological, moral or physical, capable of suddenly or slowly producing nervous exhaustion. There are certain symptoms that are rarely absent, and they are as follows: Headache—frontal and occipital; sensation of emptiness of the head; insomnia and disturbed sleep; psychic adynamia; motor enfeeblement; spinal hyperaesthesia; gastro-intestinal atony; genital and vaso-motor disorders. Because the symptoms referred to the head are usually so aggravated, the patients so often seek the advice of the ophthalmologist. The author's experience with these patients that the vision is normal or nearly so. Assuming that a mydriatic is used as routine practice, he says the first thing to put the physician on guard is the statement, by the patient, as the examination progresses, that there is a continued failure of vision,

complaining of fatigue and requesting periods of rest. The longer the examination is continued the more restricted becomes the field of vision. There is a constant shifting of the axis of astigmatism, and this may be true whether actual astigmatism exists or not. Employing the maddox rod test, it is found there is no permanent point of fixation of the streak and often there is a characteristic swinging motion, like the swinging of the pendulum of a clock. He considers the foregoing symptoms pathognomonic of neurasthenia, especially when there is found no refractive error, or one so low as to be out of proportion to the intensity of the symptoms. Color-blindness is sometimes present, and the patient sometimes complains of lacrymation, dread of light, neuralgia, etc. Blurring of vision seems to be the most disturbing feature.

Further investigation will reveal the presence of other stigmata of neurasthenia. The neurasthenic eye is only a link in the chain of symptoms. It is the sum total of all the different manifestations which present the typical picture. The disease is almost exclusively confined to young females, though occasionally seen in women undergoing menopause. When associated with hysterical amblyopia the diagnosis is much simplified.

There is no reason why these patients should not be affected with refractive errors the same as any other class, and often they are greatly benefited by the prescription for the proper glasses; but considering the origin of the true neurasthenia, which is central, we are not justified in promising or expecting a cure. The patient should be given a clear understanding of her condition and her mind dispossessed of the idea that glasses will be a panacea for all her sufferings. Rest from near work is the most essential element in establishing a relief or a cure. Vigorous physical exercise in the open air and gymnastics indoors in inclement weather, will be found the most efficient in caring for these unfortunates.

Discussion.—Dr. Griffin said he has at present a patient under observation that brings out a good many points made by the author of the paper, a professor in the University of Michigan, who is very neurasthenic. He is a hard worker, and has some peculiarities. He imagines he can tell when he has a rise of temperature by a peculiar twist of his eye. He was tested at this time, but no rise in temperature could be demonstrated. He had about $\frac{1}{8}$ astigmatism in one eye. He had difficulty in obtaining glasses for his presbyopia. He could see two lenses all the time, although the glasses were

centered perfectly. These are most unsatisfactory cases, and have to be handled with a great deal of care.

Dr. Bradfield, referring to these patient's insisting upon wearing glasses, told of a child in his care whom he saw at first at the age of 7. She never wore any glass to exceed a year. She was finally sent to Dr. Wilder, who refracted her carefully and came to the same conclusion. He prescribed minus 50, with the suggestion that after she had worn them three months she was to return for full correction. He gave her full correction after three months, and she only wore the glasses about two months.

Dr. Heckle, Pittsburg, Pa., said these conditions were very perplexing and call for all the ingenuity a man may possess, for the reason that the refraction varies from day to day and from month to month, and the thing taxes the physician's patience and the patient's patience. Sometimes the glasses are of no avail at all.

Dr. Goux, closing discussion, noted that some neurologists say the cases are practically incurable. They are mostly hysterical people, and if they are cases of degeneracy they cannot be relieved. He finds if he pins his patients down to actual statements, they are not wearing their full correction faithfully as instructed. He has two cases where the patients could not wear the glasses at all, though the latter were correct. The variable condition of the patient, dependent upon the condition of the nervous system, make the condition so different from time to time that what you might prescribe as proper today might tomorrow be of no avail.

Degenerate Ocular Changes Resulting from Consanguinity of Parents. Lee Wallace Dean, Iowa City, Iowa. The author is sure that if there be a perfect parent stock and if the offspring be perfect, there can be no bad result from consanguinous marriage, but it is rare to find such a perfect condition, as a perfect stock is a rare thing in the human race. On the other hand, if there is in a family some hereditary taint, the consanguinous marriage of the first degree simply doubles the tendency for the development of the hereditary conditions. Such a condition may have been latent for generations, and the marriage of first cousins has so doubled the tendency that several of the children will show the same degenerate conditions. With the exception of the central nervous system, we find the largest variety of degenerate stigmata in the eye, for the reason that the eye is really a specialized portion of the brain and is consequently subjected to the same influences as the central nervous system during its development. He questions whether retinitis

pigmentosa should be placed in this category. He cited several cases of his own observation where there was consanguinity of the first degree in the parents, and while there was no family history of eye trouble, there was varying degrees of degeneration in this regard in the children. A large per cent of Albinos are the result of consanguinous marriages.

The cases of microphthalmus coloboma of iris, congenital cataract and anophthalmus mentioned are examples of arrest of development. The condition of the eye is not due to local conditions but to some central disturbance. With our present knowledge of the physiology of the central nervous system, one cannot say as to whether they are developmental centers, that is, centers which control the growth of parts, or whether they are simply the trophic centers which control their nourishment. The condition is due to a disturbance of the tropic center, or of both if they exist. One may expect these degenerate conditions in the products of consanguinous marriages, because of the increase of the same hereditary tendencies in the germ. By means of the nuclear division and formation of the second polar body, the excessive accumulation of different kinds of hereditary tendencies or germ plasms is prevented. With the removal of the second polar body as many different kinds of idioplasm are removed from the egg as will afterwards be introduced by the sperm nucleus. If the latter contains the same hereditary tendencies as the ovum, there will be a greater tendency for these to become manifest than if the latter were different.

Discussion.—Dr. Vail reported that in seven children in two families where the parents were cousins, five had congenital cataract.

Dr. Alt told of a large family in Illinois where they had intermarried for years and they nearly all have cataract. One member of the family, a physician, comes to him every year to see if there is any sign of beginning cataract. In that family 43 cases had been operated upon for cataract.

Sarcoma of the Choroid. W. Stanley Samson, M. D., Lancaster, O. This is considered a rare disease, occurs most frequently between the 40th and 60th years, seldom occurring in childhood, in which respect it differs from glioma. The prognosis is grave and always proves fatal if the tumor is not removed early. The treatment is enucleation as soon as the diagnosis is certain that the growth is confined to the ball.

Dr. Samson described a case which he operated upon. The pain

preceded blindness one year, which differs from the typical clinical history. Also a case of doubtful diagnosis following a traumatism, in which operation has been advised and refused.

Discussion.—Dr. Vail said that he had within the past six months removed the entire contents of the orbit, and that while it seemed heroic, it was one of the easiest operations he had ever attempted, much to his surprise. He described the operation as similar to taking a pie out of a pan with a knife.

Dr. Alt said that while in former years detachment of the retina was considered a point of diagnosis, it had been proven to be untrue.

Dr. Bradfield said he always wants to have a cautery at hand when he takes out the contents of the orbit, and asked how the essayist covered up the orbit afterwards.

Dr. Vail said that he simply packed the orbital cavity and that he had found the hemorrhage inconsequential. He would regard the use of the galvanic battery or chromic acid in this locality dangerous, it being so near the brain. He did not find it necessary to do plastic surgery.

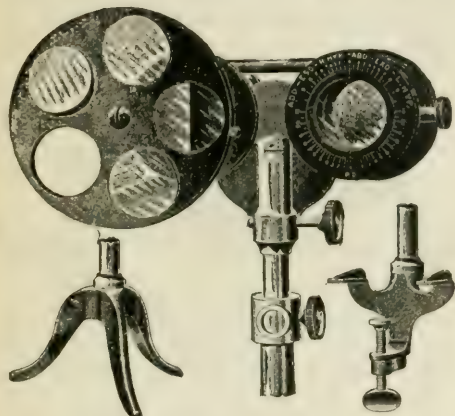
Dr. Wilder said he had treated a number of desperate cases in this way and all had good results. He also feels better satisfied when he has the cautery ready at hand. By gently touching the vessels with the cautery at a dull red heat, they can be seared perfectly without much danger. Some of these cases will take a long time to heal. He has used long ribbon strips of Tiersch grafts and folded them around the orbit, which concludes the case promptly.

Dr. Samson said he controlled the hemorrhage by pressure with sterile gauze. He has never found it necessary to use grafts.

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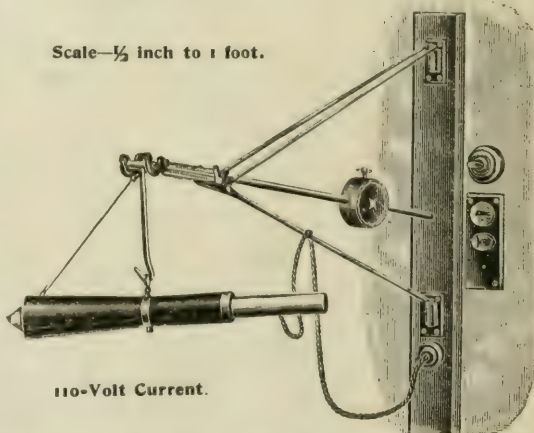
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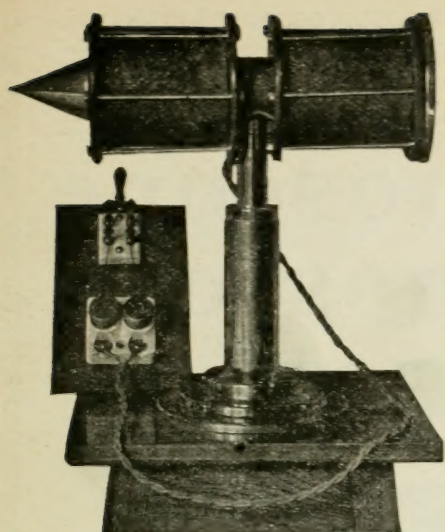
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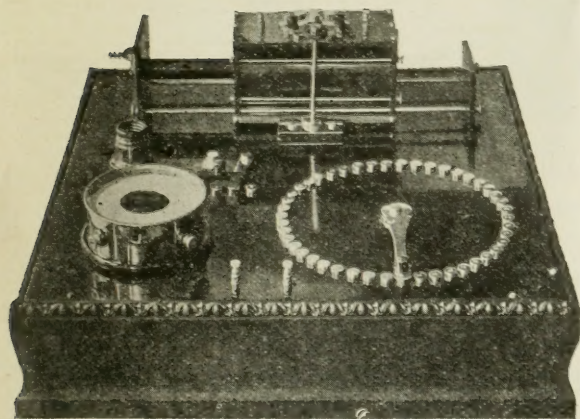
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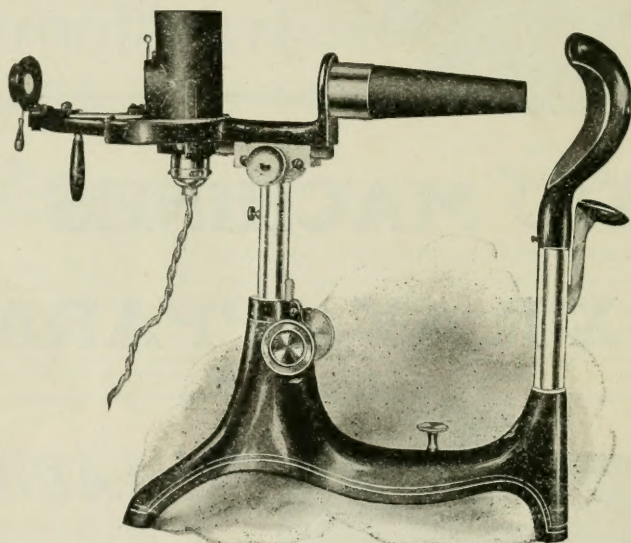
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